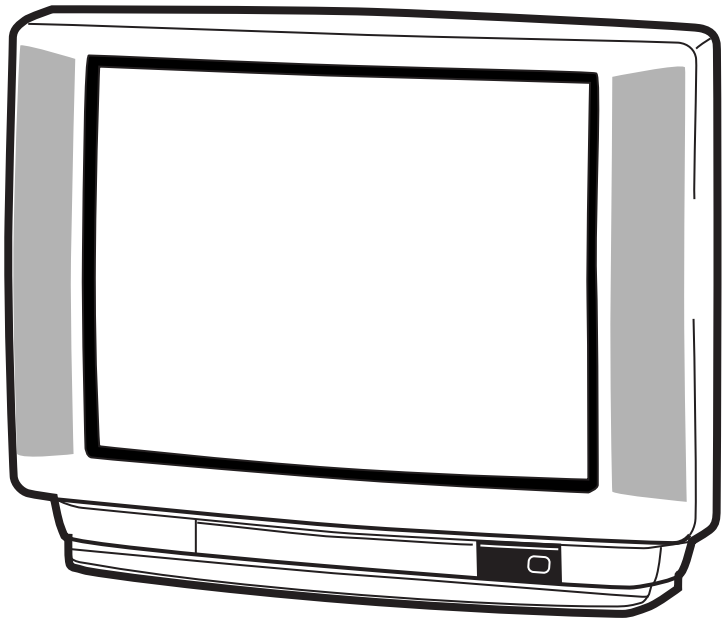
SANYO

Colour Television Service Manual

CE32WN4

Model No. CE32WN4



PRODUCT CODE: 111354516
ORIGINAL VERSION: Chassis No. EB6

Give complete “SERVICE REF. NO.” for parts order or servicing. It is shown on the rating plate at the cabinet back of the unit.

Note
This T.V. receiver will not work properly in foreign countries where the television transmission system and power source differ from the design specifications. Refer to the specification table on page 2.

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SAFETY PRECAUTION

1: An isolation transformer should be connected in the power line between the receiver and the AC line when a service is performed on the primary of the converter transformer of the set.
2: Comply with all caution and safety-related notes provided on the cabinet back, inside the cabinet, on the chassis or the picture tube.
3: When replacing a chassis in the cabinet, always be certain that all the protective devices are installed properly, such as, control knobs, adjustment covers or shields, barriers, isolation resistor-capacitor networks etc.Before returning any television to the customer, the service technician must be sure that it is completely safe to operate without danger of electrical shock.

X-RADIATION PRECAUTION

The primary source of X-RADIATION in the television receiver is the picture tube. The picture tube is specially constructed to limit X-RADIATION emissions. For continued X-RADIATION protection, the replacement tube must be the same type as the original including suffix letter. Excessive high voltage may produce potentially hazardous X-RADIATION. To avoid such hazards, the high voltage must be maintained within specified limit. Refer to this service manual, high voltage adjustment for specific high voltage limit. If high voltage exceeds specified limits, take necessary corrective action. Carefully follow the instructions for +B1 volt power supply adjustment, and high voltage adjustment to maintain the high voltage within the specified limits.

PRODUCT SAFETY NOTICE

Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by mark ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. It is particularly recommended that only parts designated on the parts list in this manual be used for component replacement designated by mark ⚠ . No deviations from resistance wattage or voltage ratings may be made for replacement items designated by mark ⚠ .

SPECIFICATIONS

Power source	AC 220~240V 50Hz
Television System	B/G, D/K
Colour system	PAL/NTSC4.43 on Air (PAL/NTSC4.43/NTSC3.58 in AV mode)
Channel coverage	VHF: E2-E12, R1-R12 UHF: 21-69 CATV: X, Y, Z, S1-S41
Aerial input impedance	75ohm
AV terminals	
AV1:	CENELEC Standard Input: Composite video, RGB and audio-L/R Output: TV-output with composite video and audio-L/R
AV2:	CENELEC Standard Input: Composite video, S-VHS and audio-L/R Output: Monitor-output with composite video and audio-L/R
Sound output (continuous) (watts)	5.0 x 2
Picture tubes (Inches)	28
Dimensions (WxHxD)	736 x 597 x 494 mm
Weight	32 kg

Specifications subject to change without notice.

CHASSIS DIAGRAMS

This is a basic diagram for all models and therefore differs slightly from the actual block diagram.

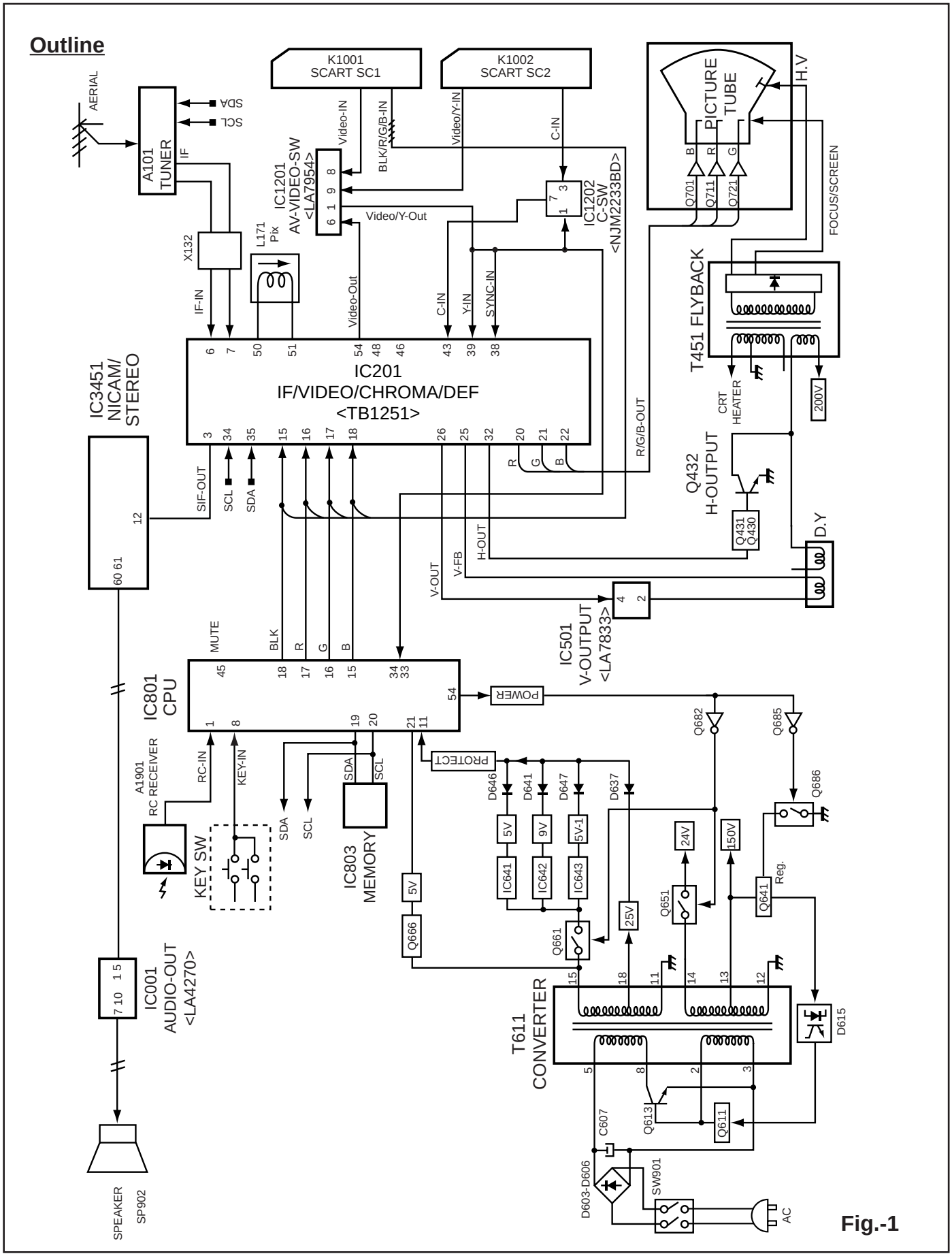
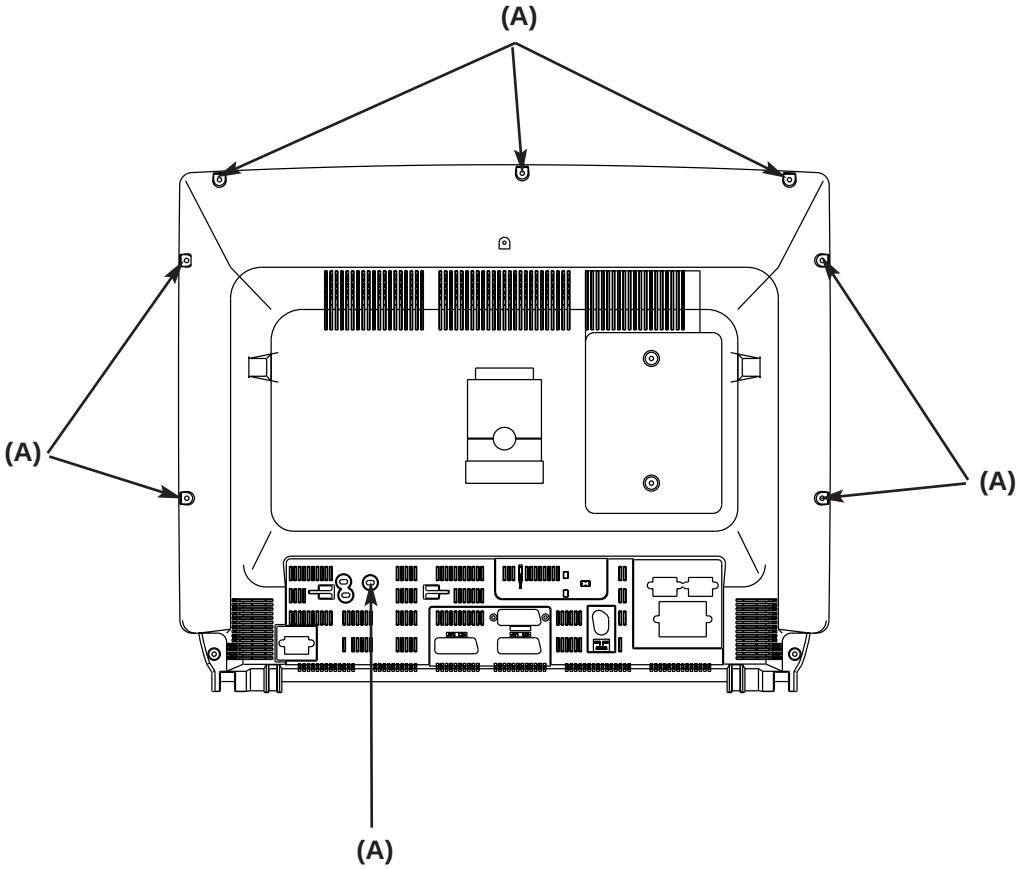


Fig.-1

DISASSEMBLY

CABINET BACK DISASSEMBLY

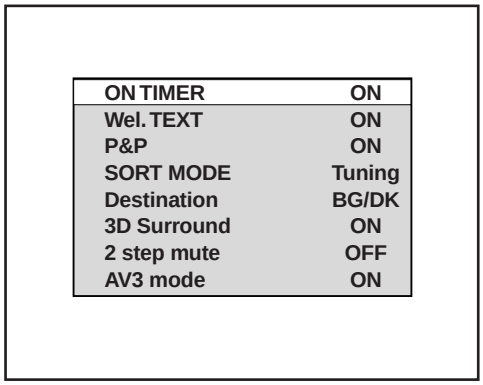
1. Remove 8 screws(A) to take the cabinet back off.



[After replacing the Memory IC (IC803)]
The memory IC, IC803, stores the feature setting data of TV set and service adjustments data for each circuit, therefore, when the memory IC is replaced, it should be programmed by following “OPTION SETTING” and “SERVICE ADJUSTMENT”.

To enter the Option Mode

+ Press and hold the **F/OK** button on the remote control and **P▼** button on the front panel of the TV. The option window will appear on the screen.



To set the option mode

+ Highlight the desired option item by using the **P▲** or **P▼** button .
+ To switch the option mode, use the **Volume - (LEFT)** or **Volume + (RIGHT)** button.
+ The data which is set in the option mode is stored into the memory IC automatically.

Following table shows the available option items and default setting mode.

Option Mode	Mode	Description & Note
ON-TIMER	ON or OFF	On-timer available, default “ON”
Wel. Text	ON or OFF	Display message when first set up, default “ON”
P&P	ON or OFF	Plug & Play mode, default “ON”
SORT MODE	Tuning or Sorting	Tuning mode, default “Tuning”
Destination	BG/DK	Destination option ,BG, BG/DK, SECAM, I-UK, I-IRE, default “BG/DK”
3D Surround	ON or OFF	3D Surround available, default “ON”
2 step mute	ON or OFF	Mute mode option, default “OFF”
AV3 mode	ON or OFF	Front AV mode option, default “ON”

Exit from the Option Mode

+ Press the **MENU** button.

[SERVICE ADJUSTMENT]

Note: Some items of the service adjustments for this chassis are controlled by the CPU, IC801, and the adjustments are carried out by using the RC handset.

IMPORTANT NOTICE

Do not attempt to adjust service adjustments not listed below otherwise it may cause loss of performance and product safety.

To enter the Service Mode

+ Press and hold the "**GREEN**" **button** and the **P▼ button** on front control panel. The adjustment item will be displayed on the screen.

Image

The available adjustment items are as follows;

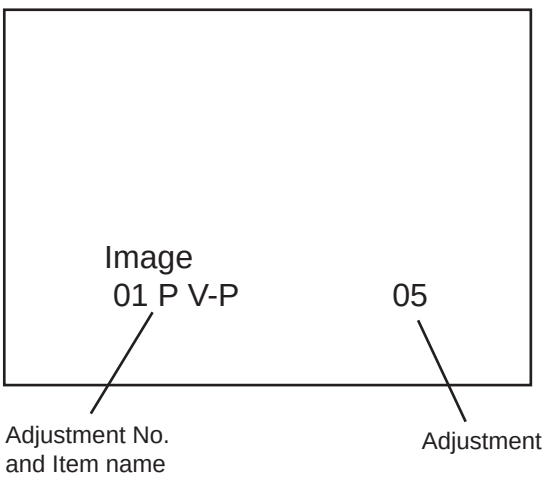
Image : This can be adjusted for picture images/shapes.
Regular : This can be adjusted for the service adjustment.
other : This is for factory setting. Do not adjust.
TB1251 : This is for the factory setting. Do not adjust.

* Do not adjust items in the "other" and "TB1251" otherwise the TV set may not operate properly.

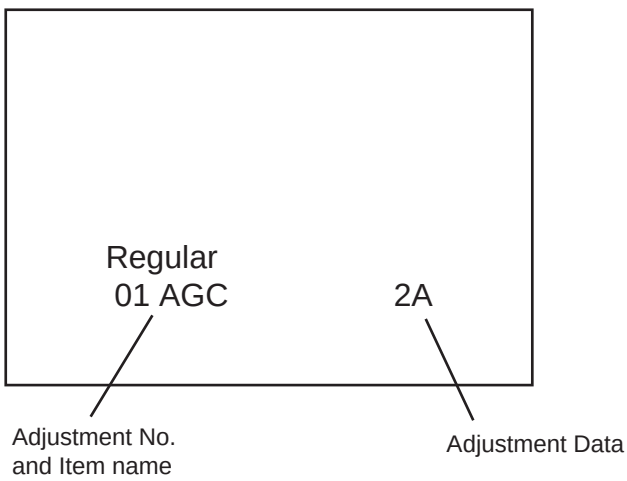
To select the mode and service item and change data value

+ Select the desired adjustment mode (**Image** or **Regular** mode **)** by using the **P▲** or **P▼ button** and then press the **Volume + (RIGHT) button**.
+ To select the adjustment item, use the **P▲** or **P▼ button**.
+ To change the service data, use the **Volume -(LEFT)** or **Volume + (RIGHT)** button.
+ The data which is set in the service mode is stored into the memory IC automatically.

Image mode



Regular mode



ADJUSTABLE SERVICE ADJUSTMENT

IMPORTANT NOTICE

Do not attempt to change the data value of service items not listed in the table below otherwise it may cause loss of performance and product safety. If you can not restore the data value of each service item, please initialize the memory IC following to the below description “INITIALIZATION OF MEMORY IC” and re-adjust all of service adjustments.

[Image]

Item No.	OSD	Description
01	P V-P	P Vertical Position Adjustment
02	P H-P	P Horizontal Position Adjustment
03	P V-L	P Vertical Linearity Adjustment
04	P VSC	P Vertical S-Correction Adjustment
05	P V-S	P Vertical Size Adjustment
06	P H-S	P Horizontal Size Adjustment
07	P PCC	P Pin Cushion Adjustment
08	P TCC	P Trapezoid Distortion Adjustment
10	P CCC	P Corner Correction Adjustment

[Regular]

Item No.	OSD	Description
1	AGC	AGC Adjustment
2	--	Cut-off Adjustment
3	GRY	Grey Scale Adjustment [White Balance]
4	CTR	Contrast Adjustment (Factory use, use default setting data)
5	SCR	Screen adjustment (Factory use, use default setting data)
6	OSD	On-screen Display Positioning Adjustment

Exit from the Service Mode

+ Press the **MENU** button or turn off the TV set by using the Mains switch.

[INITIALIZATION OF MEMORY IC]

To initialize the memory IC (IC803), press and hold the “**NORMAL**” →•← button and then press the **P▼ button** on the front control panel, **and then turn the Mains switch Off and On**. Now the initialization is completed.
When initialized the memory IC, all of the setting data (option setting data and service adjustment data) stored in the IC are reset to the default value. It is necessary to set the option setting and readjust the service adjustments listed on the above.

[ADJUSTMENTS]

To adjust each service data, please see “SERVICE ADJUSTMENT” on pages 8&9 for entering the service mode , selecting service item and adjusting the service data value.

IMPORTANT NOTICE

Do not attempt to adjust the following service adjustments except requiring the readjustments in servicing otherwise it may cause loss of performance and product safety.

+B ADJUSTMENT

1. Receive white raster pattern.
2. Set controls to normal.
3. Connect digital voltmeter to test point TP-B and GND.
4. Adjust voltage to 150 ±0.5V by using VR641 (28”).

RF-AGC ADJUSTMENT

1. Input and tune an RF signal which is VHF ch05 175.25MHz with 63dBuV/75Ω terminated signal gain.
2. Connect digital voltmeter to test point TP-A and GND.
3. Enter the service mode and select mode “Regular”, and select item “01 AGC”.
4. Press the **LEVEL+** or **LEVEL - button** to adjust voltage to be 3.2Vdc.

FOCUS ADJUSTMENT

By using FOCUS VR, adjust focus control for well defined scanning lines.

GREY SCALE ADJUSTMENT

CUT-OFF ADJUSTMENT

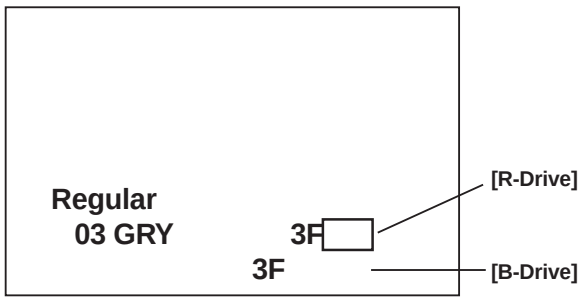
1. Select AV mode with no signal input.
2. Enter the service mode and select mode “Regular”, item “02”. The horizontal line will appear on the screen.
3. Adjust the Screen VR on the FBT to obtain the one colour to be just visible.
4. By using the buttons 1, 2, 4, 5, 7, 8 on the remote control, adjust the line to be white.

The key allocation is as follows;

Button No.	Operation
1	Increase Red
2	Decrease Red
4	Increase Green
5	Decrease Green
7	Increase Blue
8	Decrease Blue

DRIVE ADJUSTMENT

5. Receive the white raster signal.
6. Select item “03 GRY”.
7. Adjust [R-Drive] and [B-Drive] control to obtain proper white balance by using **LEVEL+** or **LEVEL -** button.
   a) Select [R-Drive] or [B-Drive] by using the **P▲** or **P▼** button.
   b) Adjust [R-Drive] or [B-Drive] by using the **LEVEL+** or **LEVEL -** button.



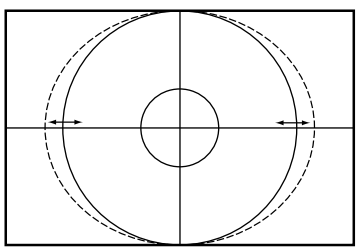
Adjustable Range:
00 ~ 3F ~ FF

HORIZONTAL POSITION ADJUSTMENT

1. Receive circular pattern .
2. Enter the service mode and select mode “Image”, item “02 P H-P”.
3. Press the **LEVEL+** or **LEVEL -** button to adjust horizontal centre.

HORIZONTAL WIDTH ADJUSTMENT

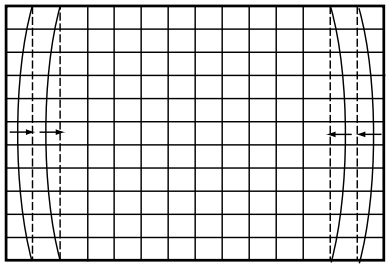
1. Receive circular pattern and set screen mode to “FULL”.
2. Enter the service mode and select “Image”, and item “06.P H-S”.
3. Press the **LEVEL+** or **LEVEL -** button to adjust the horizontal width.



PCC ADJUSTMENT

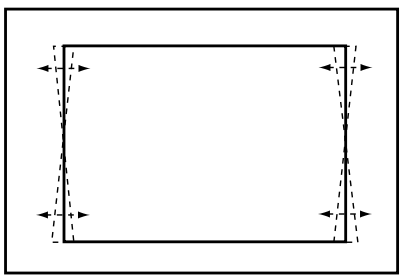
PCC ADJUSTMENT

1. Receive cross hatch pattern and set screen mode to "FULL".
2. Enter the service mode and select "Image", and item "07.P PCC".
3. Press the **LEVEL+** or **LEVEL -** button to adjust the vertical line to be straight.



TRAPEZOID ADJUSTMENT

1. Receive cross hatch pattern and set screen mode to "FULL".
2. Enter the service mode and select "Image", and item "08.P TCC".
3. Press the **LEVEL+** or **LEVEL -** button to correct the trapezum distortion of the vertical line.



HIGH-VOLTAGE CONFIRMATION

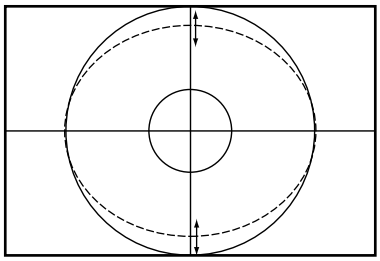
1. Receive circular pattern.
2. Connect a digital volt-meter to both terminals of R453, and a high voltage meter to CRT anode.
3. Confirm high voltage to be 29.0KV ± 1 KV at beam current reading 1.3mV (28").

VERTICAL POSITION ADJUSTMENT

1. Receive circular pattern.
2. Enter the service mode and select mode "Image, item "01 P V-P".
3. Press the **LEVEL+** or **LEVEL -** button to adjust vertical centre.

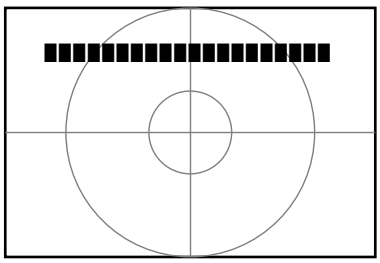
VERTICAL SIZE ADJUSTMENT

1. Receive circular pattern .
2. Enter the service mode and select mode "Image", item "05 P V-S".
3. Press the **LEVEL+** or **LEVEL -** button to adjust the vertical height.



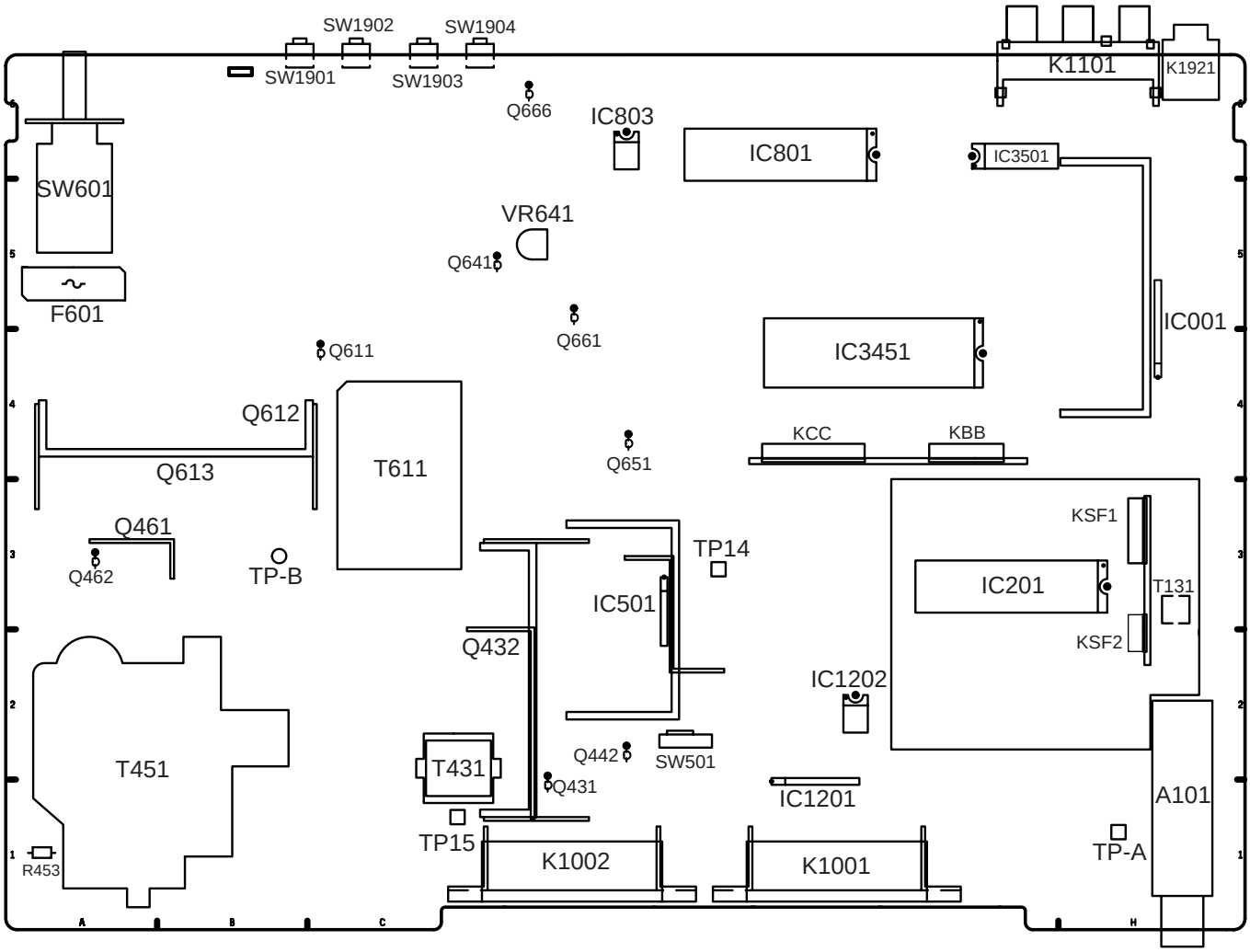
OSD POSITIONING ADJUSTMENT

1. Receive circular pattern.
2. Enter the service mode and select mode "Regular", and select item "06 OSD". The OSD test bar will appear on the top of screen.
3. Press the **LEVEL+** or **LEVEL -** button to adjust proper OSD positioning.

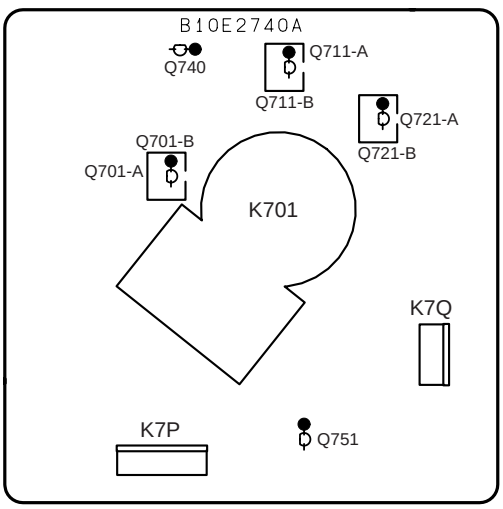


Component Locations

Main Board



CRT Board

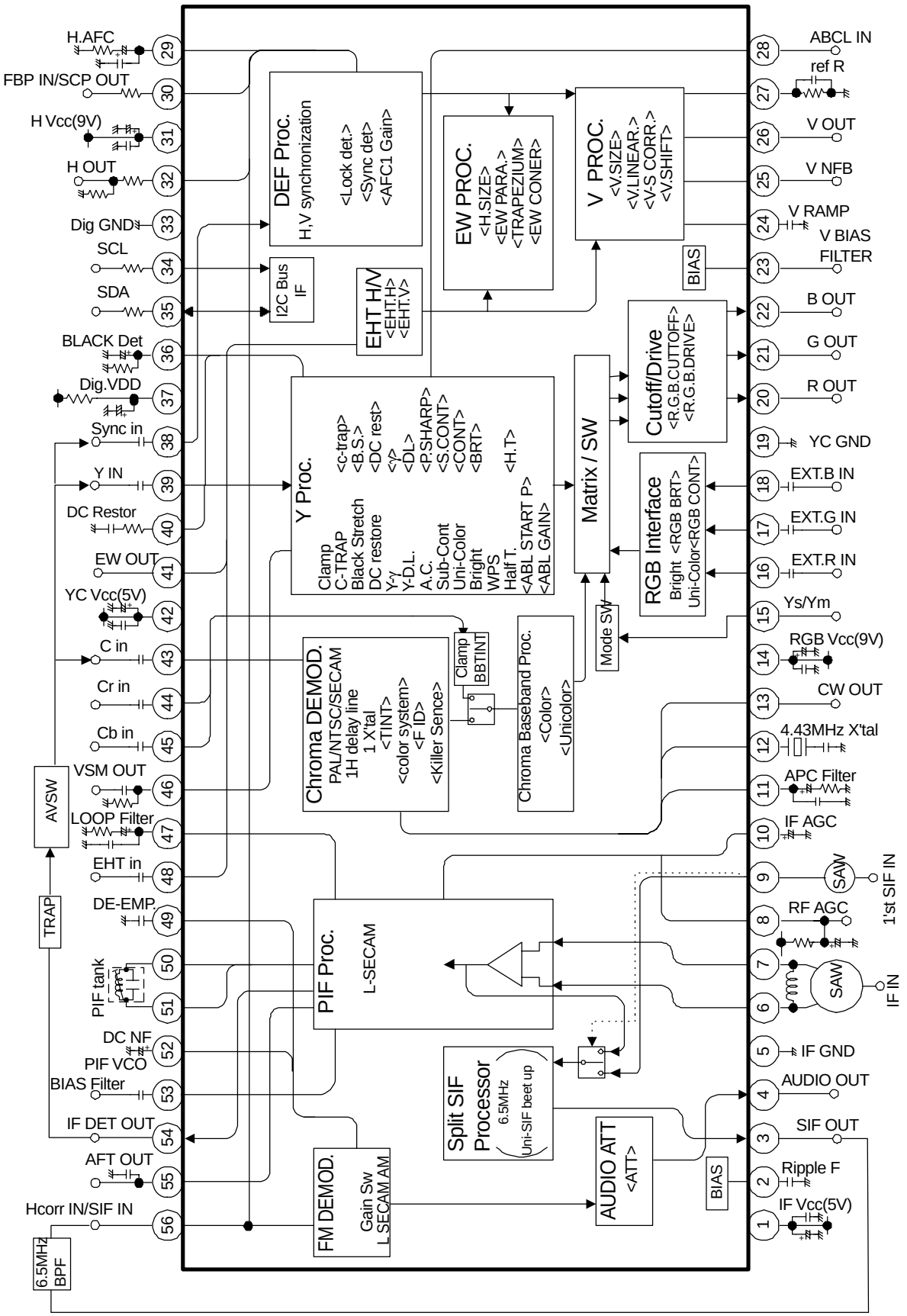


CPU PORT FUNCTIONS

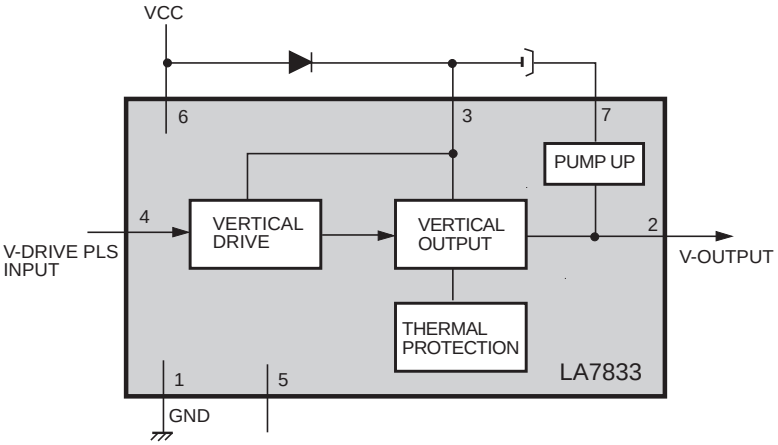
Pin No.	Function Name	Function	IN/OUT
1	RC IN	RC Signal Input	IN
2	RESET	Reset Input	IN
3	AUD-MUTE	TV Audio Mute Output “L”: Mute On	OUT
4	P0.6	Note used	--
5	P0.5	Note used	--
6	P0.4	Note used	--
7	P0.3	Note used	--
8	KEY IN	Key Switch Signal Input	IN
9	P0.1	Note used	--
10	P0.0	Note used	--
11	PROTECT	Power Failure Detect Input “L”: Error	IN
12	P3.6	Note used	--
13	P0.6	Note used	--
14	WE	Write Enable	OUT
15	B-OUT	Blue Output	OUT
16	G-OUT	Green Output	OUT
17	R-OUT	Red Output	OUT
18	BF-OUT	Fast Blanking Output	OUT
19	SDA	SDA	IN/OUT
20	SCL	SCL	OUT
21	VDD	Power	IN
22	JDTO	Not used	--
23	N.C	Not used	--
24	Vpp	Not used	--
25	AVDD3	Analogue VDD of PLL	--
26	TEST0	Test	--
27	MCFM	Test	--
28	JTCK	Test	--
29	TXCF	Analogue pin for the Teletext slicerline PLL	--
30	CVBS0	Not used	--
31	AVDD2	Analogue Power Supply	IN
32	JTMS	Not used	--
33	CVBS2	Composite Video Signal Input	IN
34	CVBS1	Composite Video Signal Input	IN
35	AGND	Digital Ground	--
36	GND	Analogue Ground	--
37	JTRSTO	Test	--
38	PXFM	Analogue pin for the Display Pixel Frequency Multiplier	--
39	AVDD	Analogue Power Supply	IN
40	H-SYNC	Horizontal Sync. Input	IN
41	V-SYNC	Vertical Sync. Input	IN
42	ACK	Answer for STATUS	OUT
43	STATUS	Request for bus open	IN
44	IGNOA	RGB on/off Switch	OUT
45	AMP-MUTE	Mute on/off SWitch	OUT
46	P4.4	Not used	--
47	LED2	LED Drive	OUT
48	P4.6	S-Video	--
49	P4.7	Not used	--
50	OSCOUT	Oscillator Output	OUT
51	OSCIN	Oscillator Input	IN
52	RF AGC	RF Gain Control	IN
53	P2.4	Not used	--
54	POWER	Power on/off Switch	OUT
55	IF AGC	IF Auto gain Control	IN
56	8PIN	AV Input Detect	IN

IC BLOCK DIAGRAMS

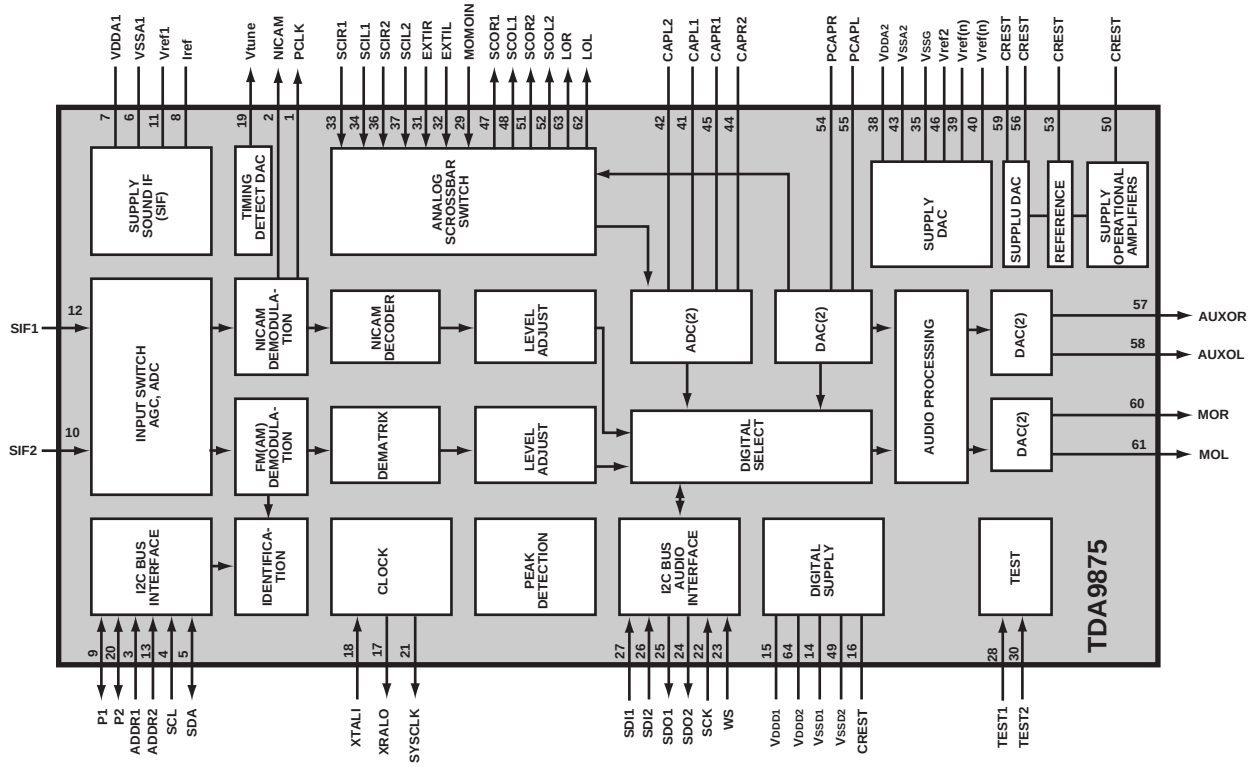
IC201 TB1251 <IF/Video/Chroma/Def.>



IC501 LA7833 <Vertical Output>

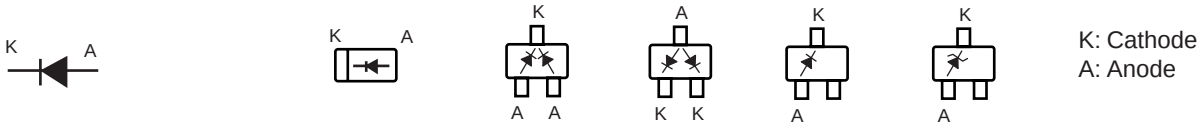


IC3451 TDA9875A <NICAM & Stereo Sound Decoder>

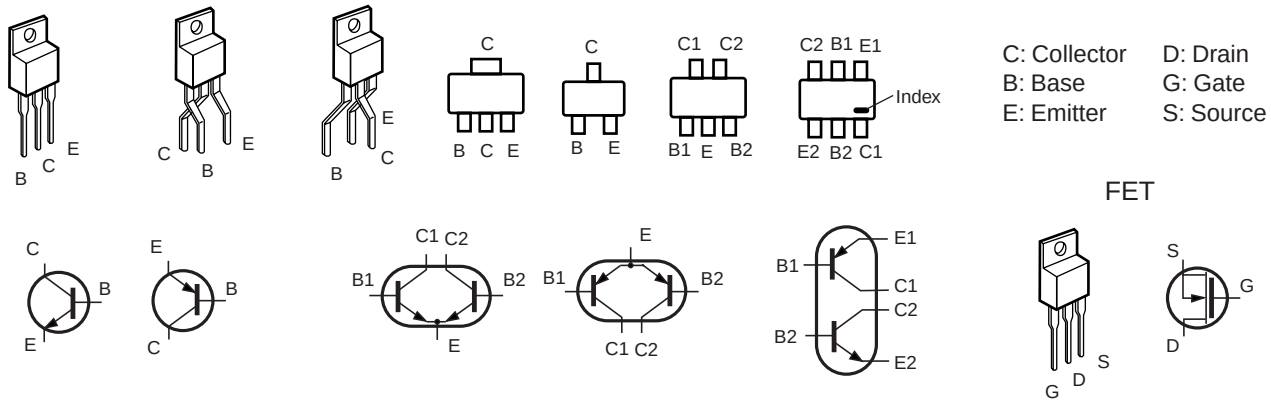


PIN DESCRIPTION OF SEMICONDUCTORS

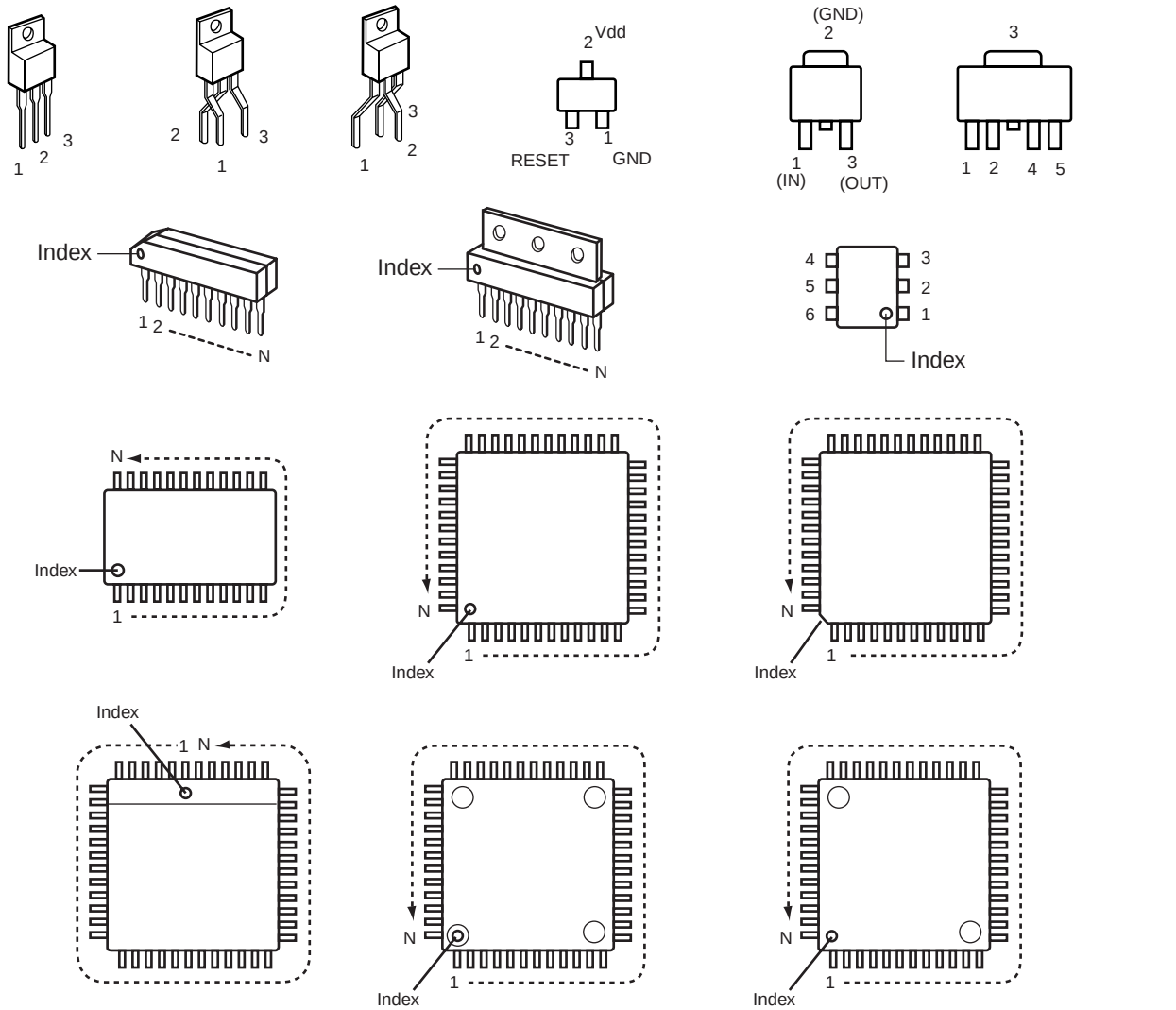
● Diode



● Transistor/FET



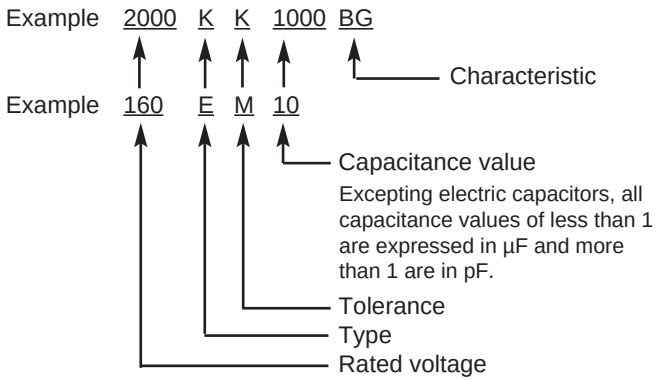
● IC



PARTS DESCRIPTION AND READING IN SCHEMATIC DIAGRAM

1. The parts specification of resistors, capacitors and coils are expressed in designated code. Please check the parts description by the following code table.
2. Some of transistors and diodes are indicated in mark for the substitution of parts name. Please check the parts name by the following code table.
3. Voltages and waveforms were taken with a video colour bar signal(1Vp-p at 75 ohms terminated) and controls to normal.
4. Voltages were taken with a high-impedance digital voltmeter.

Capacitor Reading


Example 2000 K K 1000 BG
Characteristic
Example 160 E M 10
Capacitance value
Excepting electric capacitors, all capacitance values of less than 1 are expressed in µF and more than 1 are in pF.
Tolerance
Type
Rated voltage

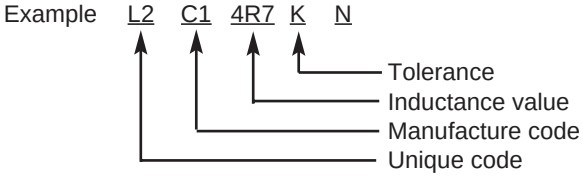
● Material table

Mark	Material
E	Electrolytic
P	Electrolytic (non-polarized)
C	Ceramic (temperature compensation)
K	Ceramic
F	Polyester
N	Polypropylene
M	Metalized polypropylene
H	Metalized polypromylar
B	Ceramic (semiconductor)
G	Metalized polyestel
Y	Composite film
S	Styrol
T	Tantalum oxide solid electrolytic
U	Organic semiconductive electrolyte
D	Electric double layer electrolytic

● Tolerance table

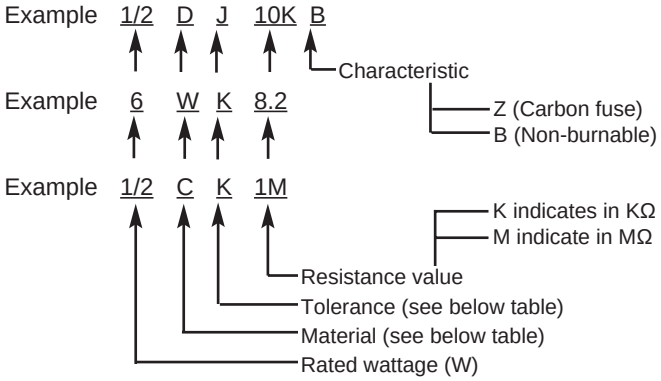
Mark	Tolerance	
A	not specified	
B	±0.1	
C	±0.25	
D	±0.5	
F	±1	
G	±2	
E	±2.5	
H	±3	
J	±5	
K	± 0	
M	±20	
N	±30	
P	+100	-0
Q	+30	-10
T	+50	-10
U	+75	-10
V	+20	-10
W	+100	-10
X	+40	-20
Y	+150	-10
Z	+80	-20

Coil Reading



Mark	Tolerance (nH)	Mark	Tolerance (%)
C	±0.25	G	±2
D	±0.5	J	±5
S	±0.3	K	±10
A	±0.2	L	±15
		M	±20

Resistor Reading



Note: Resistor which is indicated with resistance value only are 1/6W carbon resistor. Resistor which is indicated with material, tolerance and value are 1/4W rated wattage.

● Material table

Mark	Material
D	Carbon
N	Metal film
S	Oxide metal film
C	Solid
G	Metal glaze
W	Wire wounding or cement
H	Ceramic
F	Fusible

● Tolerance table

Mark	Tolerance
A	±0.05
B	±0.1
C	±0.25
D	±0.5
F	±1
G	±2
J	±5
K	±10
M	±20
P	+5 -15
Z	used in 0 ohm

Diode/Transistor Type Reading

● Diode

Mark	Type number
R	1S2076A,1S2473,1N4148
AA	1S2076A,1S2473,1SS133,1N4148

● Transistor

(1) NPN type

Mark	Type number				
--	2SC536	2SC945A	2SC1815	2SC1740S	
AD	NF, NG	PA, QA, RA	Y, GR	Q, R, S	
AE	NF, NG	PA, QA	O, Y, GR	Q, R, S	

(2) PNP type

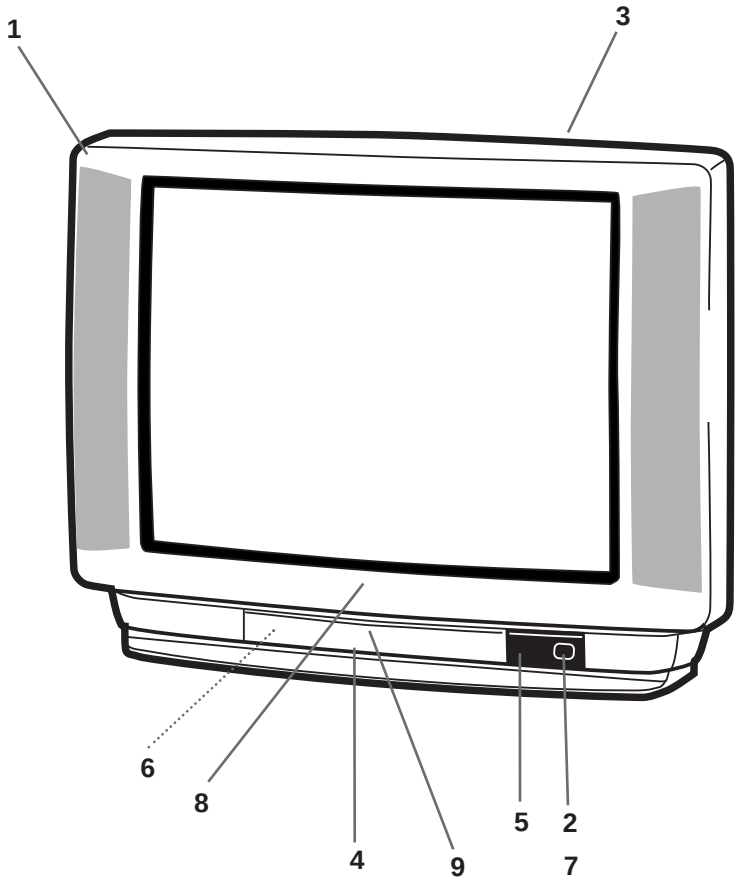
Mark	Type number				
--	2SA608	2SA564A	2SA1015	2SA933S	
AB	NF	R	Y, GR	R	
AC	NF	Q, R	O, Y, GR	Q, R	

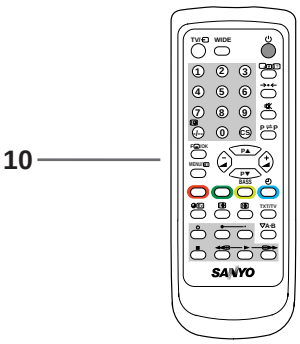
(3) Chip type

Mark	Type number				
--	2SA1179	2SA1037K	2SA1037AK	2SC2812	2SC2412K
AJ	M6, M7	R, S	R, S		
AH				L6, L7	R, S

CABINET PARTS LIST FOR MODEL CE28BN5-C-00

Note: Parts order must contain Service Ref. No., Part No., and descriptions.





Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
CABINET PARTS			**ACCESSORIES**		
1	610 273 1767	ASSY,CABINET FR-F7SDV	10	JXMKE	RC TRANSMITTER
2	610 261 6057	BUTTON POWER-F3SCM		SKP10303	INST MANUAL - C3JVV(1)
3	610 286 7688	CABINET BACK-G-F3SLV-A		SKP10304	INST MANUAL - C3JVV(2)
4	610 286 7763	DOOR-F7SGV		SKP10308	INST MANUAL - C3JVV(3)
5	610 261 6132	DEC BOARD-F3SCM		SKP20335	SHEM DIAG -C3SVV-00
6	610 275 0232	DEC CONTROL SHEET-F3JPV		645 027 6927	BATTERY
7	610 261 3032	COIL SPRING-E7GCS			
8	645 023 4316	BADGE,SANYO*46.2X13.5L45			
9	645 019 2449	LATCH PUSH,7.9X6.9BK			

CHASSIS ELECTRICAL PARTS LIST

Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by a ⚠ mark in this parts list and the circuit diagram show components whose value have special significance to product safety. It is particularly recommended that only parts specified on the following parts list be used for components replacement pointed out by the mark ⚠.

Note: Parts order must contain Service Ref. No., Part No., and descriptions.

Read description in the Capacitor and Resistor as follows:

CAPACITOR

CERAMIC 100P K 50V

- 50V — Rated Voltage
- K — Tolerance Symbols:

Less than 10PF

A: Not specified B: ±0.1PF C: ±0.25PF
D: ±0.5PF F: ±1PF G: ±2PF
R: ±0.25-0PF S: ±0-0.25PF E: +0-1PF

More than 10PF

A: Not specified B: ±0.1% C: ±0.25%
D: ±0.5% F: ±1% G: ±2%
H: ±3% J: ±5% K: ±10%
L: ±15% M: ±20% N: ±30%
P: +100-0% Q: +30-10% T: +50-10%
U: +75-10% V: +20-10% W:+100-10%
X: +40-20% Y: +150-10% Z: +80-20%

- 100P — Rated value: P=pico farad, U=Micro farad
- CERAMIC — Material:

CERAMIC .....Ceramic
MT-PAPER .....Metallized Paper
POLYESTER .....Polyester
MT-POLYEST.....Metallized Polyester
POLYPRO .....Polypropylene
MT-POLYPRO ....Metallized Polypropylene
COMPO FILM.....Composite film
MT-COMPO .....Metallized Composite
STYRENE.....Styrene
TA-SOLID .....Tantalum Solid
AL-SOLID .....Aluminium Solid
ELECT .....Electrolytic
NP-ELECT .....Non-polarised Electrolytic
OS-SOLID .....Aluminium Solid with Organic Semiconductive Electrolytic
DL-ELECT .....Double Layered Electrolytic

RESISTOR

CARBON 4.7K J A 1/4W

- 1/4W — Rated Wattage
- A — Performance Symbols:
  A: General B: Non flammable Z: Low noise
  Other: Temperature coefficient
- J — Tolerance Symbols:
  A:±0.05% B:±0.1% C:±0.25% D:±0.5%
  F:±1% G:±2% J: ±5% K:±10%
  M:±20% P:+5-15%
- 4.7K — Rated value, ohms:
  K: 1,000, M: 1,000,000
- CARBON — Material:

CARBON	Carbon
MT-FILM	Metal Film
OXIDE-MT	Oxide Metal Film
SOLID	Composition
MT-GLAZE	Metal Glaze
WIRE WOUND	Wire Wound
CERAMIC RES	Ceramic
FUSIBLE RES	Fusible

Chassis construction

CE28BN5-C-00

OUT OF CIRCUIT - 013C3SVV (Page 17)
1AA0B10H056E0 ASSY,PWB,MAIN C3SVV (Page 17~22)
1AA0B10H047B0 ASSY,PWB,HARMONICS EB6 AC (Page 22)
1AA0B10E595B0 ASSY,PWB,CRT C2WBV (Page 22~23)

OUT OF CIRCUIT - 013C3SVV

Ref. No.	Part No.	Description
COIL		
⚠ L901	645 041 8037	PRE-FORM,D-COIL,28-TOTOKU
PICTURE TUBE		
⚠ Q901	414 011 1602	A66EHJ13X38 50HZ,52% POL.
MISCELLANEOUS		
SP901	610 232 3986	SPEAKER
SP902	610 232 3986	SPEAKER
⚠ W901	645 012 7632	EURO PLUG +2P HOUSE @ 2.1
W902	610 286 1594	GND,WIRE CONEC.C2WAV

1AA0B10H056E0 ASSY,PWB,MAIN C3SVV

Ref. No.	Part No.	Description
CAPACITOR		
C001	403 044 9521	ELECT 100U M 25V
C003	403 207 0317	SMD 1MF GRM40Y5V105Z16PT
C004	403 155 2111	CERAMIC 1500P K 50V
C005	403 047 3100	ELECT 47U M 25V
C006	403 207 0317	SMD 1MF GRM40Y5V105Z16PT
C007	403 155 2111	CERAMIC 1500P K 50V
C008	403 044 9521	ELECT 100U M 25V
C009	403 157 6612	CERAMIC GRM39X7R471K50PT
C010	403 201 5011	16 YK 330 M TA K0811
C011	403 224 5012	GRM188F51C154ZA01D MUR.
C012	403 224 5012	GRM188F51C154ZA01D MUR.
C013	403 154 1917	35 YK 1000 M TA K1220
C014	403 224 5012	GRM188F51C154ZA01D MUR.
C015	403 224 5012	GRM188F51C154ZA01D MUR.
C016	403 218 8151	25 YK 1000 M TA 1020
C017	403 218 8151	25 YK 1000 M TA 1020
C052	403 113 3815	CERAMIC 1000P K 50V
C056	403 155 1510	CERAMIC 180P J 50V
C1002	403 323 8815	GRM40Y5V225Z16VPT SMDCAP
C1003	403 323 8815	GRM40Y5V225Z16VPT SMDCAP
C1004	403 323 8815	GRM40Y5V225Z16VPT SMDCAP
C101	403 233 1517	50 YK 4R7 M TA 0511
C1010	403 157 3611	CERAMIC 100P J 50V
C1012	403 157 3611	CERAMIC 100P J 50V
C1013	403 157 3611	CERAMIC 100P J 50V
C1014	403 113 3815	CERAMIC 1000P K 50V
C1015	403 233 0817	ELECT 10U M 50V
C1016	403 113 3815	CERAMIC 1000P K 50V
C1017	403 233 0817	ELECT 10U M 50V
C102	403 039 3507	ELECT 470U M 6.3V
C1020	403 149 9218	CERAMIC 0.01U Z 50V

Ref. No.	Part No.	Description
C1021	403 157 3611	CERAMIC 100P J 50V
C1022	403 279 4312	CERAMIC 0.33U K 16V
C1024	403 157 3611	CERAMIC 100P J 50V
C1025	403 260 2944	MT-COMPO 0.33U J 50V
C1026	403 113 3815	CERAMIC 1000P K 50V
C1027	403 233 0817	ELECT 10U M 50V
C1028	403 113 3815	CERAMIC 1000P K 50V
C1029	403 233 0817	ELECT 10U M 50V
C103	403 039 3507	ELECT 470U M 6.3V
C104	403 233 0817	ELECT 10U M 50V
C106	403 149 9218	CERAMIC 0.01U Z 50V
C109	403 149 9218	CERAMIC 0.01U Z 50V
C110	403 149 9218	CERAMIC 0.01U Z 50V
C113	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
C1202	403 248 1618	16 YK 47 M TA 0511
C1203	403 149 9218	CERAMIC 0.01U Z 50V
C1204	403 233 0817	ELECT 10U M 50V
C1205	403 233 0817	ELECT 10U M 50V
C1206	403 298 9619	CERAMIC 0.1U K 16V
C1207	403 233 0817	ELECT 10U M 50V
C121	403 149 9218	CERAMIC 0.01U Z 50V
C1212	403 153 9310	CERAMIC 82P J 50V
C1213	403 233 0817	ELECT 10U M 50V
C1214	403 153 9310	CERAMIC 82P J 50V
C1215	403 153 9310	CERAMIC 82P J 50V
C1217	403 233 0817	ELECT 10U M 50V
C1218	403 153 9310	CERAMIC 82P J 50V
C122	403 164 0214	CERAMIC 0.1U Z 25V
C124	403 157 1518	CER.GRM39COG3R0C50PT
C125	403 069 8315	CERAMIC 0.01U Z 50V
C128	403 241 3807	ELECT 220U M 10V
C130	403 157 2515	CERAMIC 27P J 50V
C131	403 149 9218	CERAMIC 0.01U Z 50V
C135	403 149 9218	CERAMIC 0.01U Z 50V
C136	403 149 9218	CERAMIC 0.01U Z 50V
C138	403 149 9218	CERAMIC 0.01U Z 50V
C139	403 237 7941	MT-COMPO 0.22U J 50V
C140	403 233 0817	ELECT 10U M 50V
C141	403 207 0317	SMD 1MF GRM40Y5V105Z16PT
C143	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
C144	403 113 3815	CERAMIC 1000P K 50V
C145	403 149 9218	CERAMIC 0.01U Z 50V
C146	403 248 1618	16 YK 47 M TA 0511
C148	403 248 2813	50 YK 2R2 M TA 0511
C1900	403 038 1633	ELECT 100U M 6.3V
C201	403 149 9218	CERAMIC 0.01U Z 50V
C203	403 269 5916	CERAMIC 0.22U K 16V
C204	403 149 9218	CERAMIC 0.01U Z 50V
C205	403 149 9218	CERAMIC 0.01U Z 50V
C206	403 149 9218	CERAMIC 0.01U Z 50V
C207	403 149 9218	CERAMIC 0.01U Z 50V
C208	403 248 1618	16 YK 47 M TA 0511
C209	403 164 0214	CERAMIC 0.1U Z 25V
C210	403 086 2300	NP-ELECT 1U M 50V
C211	403 113 3815	CERAMIC 1000P K 50V
C212	403 086 2300	NP-ELECT 1U M 50V
C213	403 233 0817	ELECT 10U M 50V
C214	403 149 9218	CERAMIC 0.01U Z 50V
C216	403 233 0817	ELECT 10U M 50V
C217	403 160 0020	ELECT 470U M 10V
C218	403 149 9218	CERAMIC 0.01U Z 50V
C219	403 155 2418	CERAMIC 5600P K 50V
C220	403 207 0317	SMD 1MF GRM40Y5V105Z16PT
C230	403 269 5916	CERAMIC 0.22U K 16V
C231	403 113 4119	CERAMIC 2200P K 50V
C232	403 233 3818	CERAMIC 10P C 50V
C233	403 248 1618	16 YK 47 M TA 0511
C234	403 164 0214	CERAMIC 0.1U Z 25V
C235	403 164 0214	CERAMIC 0.1U Z 25V
C236	403 164 0214	CERAMIC 0.1U Z 25V
C237	403 164 0214	CERAMIC 0.1U Z 25V
C240	403 113 4119	CERAMIC 2200P K 50V
C241	403 067 7895	MT-COMPO 0.47 J 50V

Ref. No.	Part No.	Description
C242	403 237 8057	MT-COMPO 0.1U J 50V
C243	403 157 7015	CERAMIC 1800P K 50V
C244	403 215 2211	CERAMIC 0.01U K 50V
C247	403 233 0817	ELECT 10U M 50V
C251	403 314 5915	SMD CAP GRM40X7R474K16
C252	403 314 5915	SMD CAP GRM40X7R474K16
C3411	403 157 3611	CERAMIC 100P J 50V
C3412	403 157 3611	CERAMIC 100P J 50V
C3413	403 157 3611	CERAMIC 100P J 50V
C3414	403 157 3611	CERAMIC 100P J 50V
C3441	403 279 4312	CERAMIC 0.33U K 16V
C3442	403 279 4312	CERAMIC 0.33U K 16V
C3443	403 279 4312	CERAMIC 0.33U K 16V
C3444	403 279 4312	CERAMIC 0.33U K 16V
C3452	403 314 5915	SMD CAP GRM40X7R474K16
C3453	403 157 2911	CERAMIC 47P J 50V
C3454	403 164 0214	CERAMIC 0.1U Z 25V
C3456	403 164 0214	CERAMIC 0.1U Z 25V
C3458	403 157 2911	CERAMIC 47P J 50V
C3459	403 248 1618	16 YK 47 M TA 0511
C3461	403 248 1410	50 YK 1R0 M TA 0511
C3476	403 314 5915	SMD CAP GRM40X7R474K16
C3477	403 248 1618	16 YK 47 M TA 0511
C3480	403 248 1618	16 YK 47 M TA 0511
C3481	403 248 1618	16 YK 47 M TA 0511
C3482	403 149 9218	CERAMIC 0.01U Z 50V
C3483	403 149 9218	CERAMIC 0.01U Z 50V
C3484	403 248 1618	16 YK 47 M TA 0511
C3485	403 149 9218	CERAMIC 0.01U Z 50V
C3486	403 248 1410	50 YK 1R0 M TA 0511
C3487	403 248 1410	50 YK 1R0 M TA 0511
C3492	403 149 9218	CERAMIC 0.01U Z 50V
C3493	403 149 9218	CERAMIC 0.01U Z 50V
C3494	403 164 0214	CERAMIC 0.1U Z 25V
C3495	403 164 0214	CERAMIC 0.1U Z 25V
C422	403 299 3210	POLYPRO 0.027U J 400V
C423	404 079 1607	MT-POLYPRO 0.012U H 1.5K
C424	403 299 3012	POLYPRO 0.015U J 400V
C431	403 068 5612	CERAMIC 0.056U Z 25V
C432	403 075 7111	CERAMIC 1000P K 500V
C433	403 076 3112	CERAMIC 3900P K 500V
C434	403 054 0703	ELECT 47U M 35V
C437	403 066 6106	MT-POLYEST 0.47U J 250V
C441	403 309 2100	POLYPRO 0.3U J 400V
C445	403 233 0817	ELECT 10U M 50V
C450	403 248 2813	ELECT 2.2U M 50V
C451	404 063 5703	NP-ELECT 100NW1R0MTA-6311
C463	408 173 8208	POLYESTER 6800P K 100V
C466	403 188 0808	MT-POLYEST 2.2U J 100V
C468	403 233 1111	ELECT 22U M 50V
C481	403 076 1415	CERAMIC 2700P K 500V
C482	403 159 7409	MT-POLYEST 0.1U K 250V
C501	403 194 3800	ELECT 2200U M 25V
C502	403 217 1103	ELECT 220U M 35V
C503	403 139 7514	CERAMIC 39P J 50V
C512	403 194 3800	ELECT 2200U M 25V
C513	403 233 0817	ELECT 10U M 50V
C514	403 233 0817	ELECT 10U M 50V
C600	403 076 4010	CERAMIC 4700P K 500V
⚠ C601	404 056 1408	MT-POLYEST 0.1U M 250V
⚠ C602	404 056 1408	MT-POLYEST 0.1U M 250V
C603	403 076 6727	CERAMIC DE0607-486B102K1K
C604	403 076 6727	CERAMIC DE0607-486B102K1K
C607	404 050 9509	ELECT 150U M 400V 85C
C613	403 179 1213	POLYESTER 4700P J 50V
C614	403 237 8057	MT-COMPO 0.1U J 50V
C615	403 179 3217	POLYESTER 0.015U J 50V
C616	403 165 6215	CERAMIC 1000P K 2K
C617	403 179 2418	POLYESTER 0.022U K 50V
⚠ C631	404 073 4505	DE1210-1 E 222M-KX
C633	403 214 4404	ELECT 470U M 35V
C637	403 158 1309	ELECT 2200U M 35V

Ref. No.	Part No.	Description
C640	403 218 8200	ELECT 2200U M 25V
C641	403 165 6017	CERAMIC 1000P K 1K
C642	404 085 6900	200YXF100MCA100U M 200V
C643	403 113 3815	CERAMIC 1000P K 50V
C646	403 165 6126	CERAMIC 470P K 1K
C647	403 157 6810	CERAMIC 680P K 50V
C648	403 038 1603	ELECT 100V M 6.3V
C649	403 195 8804	ELECT 100U M 16V
C650	403 038 9708	ELECT 330U M 6.3V
C666	403 248 1618	16 YK 47 M TA 0511
C682	403 258 3619	16 YK 33 M TA 0511
C685	403 248 1410	50 YK 1R0 M TA 0511
C801	403 149 9218	CERAMIC 0.01U Z 50V
C802	403 248 1618	16 YK 47 M TA 0511
C803	403 164 0214	CERAMIC 0.1U Z 25V
C807	403 164 0214	CERAMIC 0.1U Z 25V
C810	403 269 5916	CERAMIC 0.22U K 16V
C811	403 233 0817	ELECT 10U M 50V
C812	403 164 0214	CERAMIC 0.1U Z 25V
C814	403 155 2210	CERAMIC 3300P K 50V
C816	403 155 2319	CERAMIC 4700P K 50V
C817	403 145 9915	CERAMIC 22P J 50V
C818	403 155 2319	CERAMIC 4700P K 50V
C819	403 145 9915	CERAMIC 22P J 50V
C822	403 113 4119	CERAMIC 2200P K 50V
C824	403 153 9310	CERAMIC 82P J 50V
C826	403 257 0817	50 YK 0R47 M TA 0511
C827	403 260 3030	ECQ-V1H564JL3 0.56U J 50
C833	403 157 2515	CERAMIC 27P J 50V
C834	403 157 2515	CERAMIC 27P J 50V
C835	403 155 2319	CERAMIC 4700P K 50V
C836	403 157 2911	CERAMIC 47P J 50V
C861	403 155 1312	CERAMIC 150P J 50V

DIODE

D041	408 008 2406	DIODE 1N4148
D1002	407 063 8319	Z.DIODE MTZJT-77-11C
D1003	407 063 8319	Z.DIODE MTZJT-77-11C
D1007	407 063 8319	Z.DIODE MTZJT-77-11C
D1008	407 063 8319	Z.DIODE MTZJT-77-11C
D101	407 100 0214	ZENER DIODE MTZJ36A
D1010	407 063 8319	Z.DIODE MTZJT-77-11C
D1011	407 012 4416	DIODE 1SS133-T-77
D1012	407 012 4416	DIODE 1SS133-T-77
D1013	407 012 4416	DIODE 1SS133-T-77
D1014	407 012 4416	DIODE 1SS133-T-77
D1015	407 012 4416	DIODE 1SS133-T-77
D1016	407 012 4416	DIODE 1SS133-T-77
D1021	407 063 8319	Z.DIODE MTZJT-77-11C
D1022	407 063 8319	Z.DIODE MTZJT-77-11C
D1023	407 063 8319	Z.DIODE MTZJT-77-11C
D1024	407 063 8319	Z.DIODE MTZJT-77-11C
D1025	407 063 8319	Z.DIODE MTZJT-77-11C
D1026	407 063 8319	Z.DIODE MTZJT-77-11C
D1051	407 063 8319	Z.DIODE MTZJT-77-11C
D1052	407 063 8319	Z.DIODE MTZJT-77-11C
D1202	407 063 8319	Z.DIODE MTZJT-77-11C
D1203	407 063 8319	Z.DIODE MTZJT-77-11C
D1901	407 120 9706	LED LN28RPL
D1901A	610 269 4703	HOLDER LED A-E6YC
D3441	407 063 8319	Z.DIODE MTZJT-77-11C
D3442	407 063 8319	Z.DIODE MTZJT-77-11C
D3443	407 063 8319	Z.DIODE MTZJT-77-11C
D3444	407 063 8319	Z.DIODE MTZJT-77-11C
D431	407 063 9613	ZENER DIODE MTZJ9.1A
D438	407 095 8001	DIODE ERD07-15L
D439	407 006 4128	DIODE ERB44-04V1
D442	408 007 8607	DIODE 1N4148
D445	407 012 4416	DIODE 1SS133-T-77
D446	407 063 9415	ZENER DIODE MTZJ8.2A

Ref. No.	Part No.	Description
D466	407 077 9705	ZENER DIODE MTZ20A
D469	407 007 7415	DIODE EU1 52MM
D481	407 005 9629	DIODE ERA22-04-V1 52MM
D482	407 012 4416	DIODE 1SS133-T-77
D501	407 005 7328	DIODE EM01Z
D502	407 118 2217	ZENER DIODE 1Z75
D603	407 009 6921	DIODE RM11C
D604	407 009 6921	DIODE RM11C
D605	407 009 6921	DIODE RM11C
D606	407 009 6921	DIODE RM11C
D614	408 007 8607	DIODE 1N4148
⚠ D615	407 173 2907	PHOTO COUPLE PC123F2
D616	408 007 8607	DIODE 1N4148
D617	407 007 6606	DIODE ES1
D618	408 007 8607	DIODE 1N4148
D619	407 063 8319	Z.DIODE MTZJT-77-11C
D630	407 007 7613	DIODE EU2
⚠ D633	407 166 2303	DIODE ERC-91-02L
⚠ D635	407 129 6706	DIODE RU4YX LF-L1
D637	407 012 4416	DIODE 1SS133-T-77
D641	407 012 4416	DIODE 1SS133-T-77
D642	407 009 8816	DIODE RU3AM
D643	408 008 2406	DIODE 1N4148
D644	408 008 2406	DIODE 1N4148
D645	407 099 5511	ZENER DIODE MTZJ6.2C
D646	407 012 4416	DIODE 1SS133-T-77
D647	407 012 4416	DIODE 1SS133-T-77
D663	407 063 8319	Z.DIODE MTZJT-77-11C
D666	407 063 8913	ZENER DIODE MTZJ5.6C
D683	408 008 2406	DIODE 1N4148
D685	407 099 5610	ZENER DIODE MTZ6.8A 26MM
D826	407 099 4811	Z DIODE MTZJ-T77-4.3B
D831	407 012 4416	DIODE 1SS133-T-77

INTEGRATED CIRCUIT

IC001	409 017 7505	IC LA4270
IC001-1	610 251 4186	AUDIO H/SINK ASSY EB6D
IC001-2	411 099 1500	SCR PAN+SW+W 3X12
IC1201	409 161 3408	IC
IC1202	409 268 8504	IC NJM2233BD
IC201	409 504 3300	IC TB1251CN VER 6.3
IC3451	409 445 1403	IC TDA9875A/V2
IC501	409 192 5709	IC LA7833
IC501-1	610 282 6647	ASSY,HEAT SINK V-C2WC
IC501-2	411 036 3208	SCR PAN+SW+W 3X10
IC641	409 241 5407	IC BA178M05T
IC642	409 367 2809	IC BA178M09T
IC643	409 241 5407	IC BA178M05T
IC801	410 409 3609	IC ST92195C7B1/EXU 1PAGE
IC803	409 343 6302	IC 24LC04B/P

COIL

L1003	610 078 5946	PIPE CORE
L1010	645 001 4550	PEAKING COIL 10UHK
L1011	645 001 4550	PEAKING COIL 10UHK
L1012	645 001 4550	PEAKING COIL 10UHK
L1013	645 001 4550	PEAKING COIL 10UHK
L1017	610 078 5946	PIPE CORE
L1020	645 001 4550	PEAKING COIL 10UHK
L1021	645 001 4550	PEAKING COIL 10UHK
L1022	645 001 4550	PEAKING COIL 10UHK
L1023	645 001 4550	PEAKING COIL 10UHK
L1202	645 003 8518	P.COIL LAP02TA4R7K 26MM
L1204	645 003 8518	P.COIL LAP02TA4R7K 26MM
L1205	645 003 8518	P.COIL LAP02TA4R7K 26MM
L1206	645 003 8518	P.COIL LAP02TA4R7K 26MM
L121	645 001 5526	COIL 6.8UK LAPO2TA6R8K
L171	645 040 2715	TRANS,OSC 38.9MHZ
L240	645 001 4550	PEAKING COIL 10UHK
L241	645 001 4550	PEAKING COIL 10UHK
L242	645 001 4550	PEAKING COIL 10UHK

Ref. No.	Part No.	Description
L3450	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
L3452	645 001 5441	PEAKING COIL
L3456	645 001 5441	PEAKING COIL
L3457	645 001 5441	PEAKING COIL
L3459	645 018 9999	INDUCTOR,120U
L3469	645 003 8518	P.COIL LAP02TA4R7K 26MM
L431	645 0085 628	INDUCTOR,1U M
L432	645 002 4511	CORE,PIPE
L441	645 036 7380	COIL,LINEARITY
L442	610 219 0342	COIL
L461	645 005 5645	AR635LY-1038K 2200UHK
L462	610 000 0261	COIL 349UH
L501	645 008 5642	INDUCTOR,3.3U K
L601	645 019 3873	LINE FILTER-SAMWHA TECOM
L607	610 237 1000	PIPE CORE
L608	610 237 1000	PIPE CORE
L635	610 078 5946	PIPE CORE
L641	610 078 6820	PIPE CORE
L801	645 003 8549	P.COIL LAPO2TA5R6K 26MM
L802	645 008 2887	P.COIL LALO2TB5R6K 52MM
L803	645 003 8549	P.COIL LAPO2TA5R6K 26MM
L861	645 003 8549	P.COIL LAPO2TA5R6K 26MM
TRANSISTOR		
Q002	405 014 4519	TR 2SC2412KT146/R
Q005	405 014 4519	TR 2SC2412KT146/R
Q042	405 014 4519	TR 2SC2412KT146/R
Q043	405 134 5925	TR 2SA1037AK-T146-R
Q1001	405 014 4519	TR 2SC2412KT146/R
Q1002	405 134 5925	TR 2SA1037AK-T146-R
Q1003	405 014 4519	TR 2SC2412KT146/R
Q1006	405 134 5925	TR 2SA1037AK-T146-R
Q1007	405 134 5925	TR 2SA1037AK-T146-R
Q1008	405 134 5925	TR 2SA1037AK-T146-R
Q1010	405 014 4519	TR 2SC2412KT146/R
Q1011	405 014 4519	TR 2SC2412KT146/R
Q1202	405 014 4519	TR 2SC2412KT146/R
Q1203	405 014 4519	TR 2SC2412KT146/R
Q1205	405 134 5925	TR 2SA1037AK-T146-R
Q1206	405 014 4519	TR 2SC2412KT146/R
Q121	405 014 4519	TR 2SC2412KT146/R
Q122	405 014 4519	TR 2SC2412KT146/R
Q131	405 134 5925	TR 2SA1037AK-T146-R
Q132	405 134 5925	TR 2SA1037AK-T146-R
Q133	405 014 4519	TR 2SC2412KT146/R
Q141	405 015 9721	TR 2SC2814-F4-TB
Q153	405 134 5925	TR 2SA1037AK-T146-R
Q242	405 134 5925	TR 2SA1037AK-T146-R
Q243	405 134 5925	TR 2SA1037AK-T146-R
Q244	405 134 5925	TR 2SA1037AK-T146-R
Q3452	405 014 4519	TR 2SC2412KT146/R
Q3453	405 014 4519	TR 2SC2412KT146/R
Q3454	405 014 4519	TR 2SC2412KT146/R
Q3455	405 014 4519	TR 2SC2412KT146/R
Q431	405 018 0616	TR 2SC3332-S
Q432	406 015 2501	ON5111 (BU2708DX) PH.
Q432-1	610 252 1108	H HEAT SINK E7LC
Q461	405 064 7307	TR 2SB1274-Q-RA
Q461-1	610 251 5916	HEAT SINK PCC E7LC
Q462	406 007 2106	TR JC546A
Q501	405 014 4519	TR 2SC2412KT146/R
Q611	406 007 1901	TR JC556A
Q612	405 058 0208	TR 2SC3807-R-CTV-YA
Q613	405 095 0407	TR 2SC4429-L-YB
Q613-1	610 251 5893	POW HEAT SINK E7LC
Q641	406 007 1901	TR JC556A
Q651	405 009 7003	TR 2SB985-S
Q661	405 009 7003	TR 2SB985-S
Q666	406 007 2007	TR JC546B
Q682	405 014 4519	TR 2SC2412KT146/R
Q685	405 014 4519	TR 2SC2412KT146/R
Q686	405 134 5925	TR 2SA1037AK-T146-R
Q804	405 014 4519	TR 2SC2412KT146/R
Q805	405 014 4519	TR 2SC2412KT146/R
Q807	405 134 5925	TR 2SA1037AK-T146-R
Q871	405 014 4519	TR 2SC2412KT146/R
RESISTOR		
R001	401 027 2620	CARBON 5K6 JA 1/6W
R002	401 105 0613	MT-GLAZE 10K JA 1/16W
R003	401 105 5311	MT-GLAZE 4.7K JA 1/16W
R004	401 026 1327	CARBON 27K JA 1/6W
R005	401 105 0613	MT-GLAZE 10K JA 1/16W
R006	401 026 1327	CARBON 27K JA 1/6W
R007	401 105 5311	MT-GLAZE 4.7K JA 1/16W
R008	401 027 2620	CARBON 5K6 JA 1/6W
R011	401 025 5425	CARBON 2R2 JA 1/4W 26MM
R012	401 025 5425	CARBON 2R2 JA 1/4W 26MM
R041	401 105 0613	MT-GLAZE 10K JA 1/16W
R046	401 105 6516	MT-GLAZE 680 JA 1/16W
R047	401 105 0613	MT-GLAZE 10K JA 1/16W
R048	401 105 0613	MT-GLAZE 10K JA 1/16W
R1000	401 026 7428	CARBON 39K JA 1/6W 26MM
R1001	401 105 4710	MT-GLAZE 39K JA 1/16W
R1002	401 027 6628	CARBON 75 JA 1/6W
R1003	401 027 6628	CARBON 75 JA 1/6W
R1004	401 105 6011	MT-GLAZE 5.6K JA 1/16W
R1005	401 027 6628	CARBON 75 JA 1/6W
R1006	401 105 5212	MT-GLAZE 470 JA 1/16W
R1007	401 027 6628	CARBON 75 JA 1/6W
R1008	401 105 5212	MT-GLAZE 470 JA 1/16W
R1009	401 027 6628	CARBON 75 JA 1/6W
R101	401 105 0415	MT-GLAZE 100 JA 1/16W
R1010	401 026 9620	CARBON 470 JA 1/6W 26MM
R1011	401 027 6628	CARBON 75 JA 1/6W
R1012	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R1013	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R1014	401 105 5915	MT-GLAZE 560 JA 1/16W
R1015	401 105 5915	MT-GLAZE 560 JA 1/16W
R1016	401 105 4710	MT-GLAZE 39K JA 1/16W
R1017	401 027 6628	CARBON 75 JA 1/6W
R1018	401 027 6628	CARBON 75 JA 1/6W
R1019	401 027 6628	CARBON 75 JA 1/6W
R102	401 105 0415	MT-GLAZE 100 JA 1/16W
R1020	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R1021	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R1022	401 105 5915	MT-GLAZE 560 JA 1/16W
R1023	401 105 5915	MT-GLAZE 560 JA 1/16W
R1024	401 105 2914	MT-GLAZE 22K JA 1/16W
R1025	401 105 5311	MT-GLAZE 4.7K JA 1/16W
R1026	401 105 0415	MT-GLAZE 100 JA 1/16W
R1027	401 105 0514	MT-GLAZE 1K JA 1/16W
R1028	401 105 4017	MT-GLAZE 330 JA 1/16W
R1029	401 025 8228	CARBON 22K JA 1/6W
⚠ R103	401 061 4400	OXIDE-MT 33K JA 1W
R1030	401 105 1511	MT-GLAZE 1.5K JA 1/16W
R1031	401 105 0613	MT-GLAZE 10K JA 1/16W
R1032	401 105 0613	MT-GLAZE 10K JA 1/16W
R1033	401 105 0613	MT-GLAZE 10K JA 1/16W
R1113	401 105 2914	MT-GLAZE 22K JA 1/16W
R1201	401 105 3218	MT-GLAZE 270 JA 1/16W
R1203	401 105 3218	MT-GLAZE 270 JA 1/16W
R1215	401 105 0415	MT-GLAZE 100 JA 1/16W
R1216	401 105 7315	MT-GLAZE 820 JA 1/16W
R1217	401 105 5212	MT-GLAZE 470 JA 1/16W
R1218	401 105 3416	MT-GLAZE 27K JA 1/16W
R1219	401 105 0613	MT-GLAZE 10K JA 1/16W
R1220	401 105 7315	MT-GLAZE 820 JA 1/16W
R1221	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
R1224	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R1225	401 105 0514	MT-GLAZE 1K JA 1/16W
R1226	401 105 1016	MT-GLAZE 1.2K JA 1/16W

Ref. No.	Part No.	Description
R1227	401 105 3218	MT-GLAZE 270 JA 1/16W
R1230	401 105 3218	MT-GLAZE 270 JA 1/16W
R124	401 105 3317	MT-GLAZE 2.7K JA 1/16W
R126	401 105 0415	MT-GLAZE 100 JA 1/16W
R127	401 105 5915	MT-GLAZE 560 JA 1/16W
R128	401 105 0514	MT-GLAZE 1K JA 1/16W
R129	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
R130	401 105 0514	MT-GLAZE 1K JA 1/16W
R131	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R132	401 105 0514	MT-GLAZE 1K JA 1/16W
R133	401 105 0514	MT-GLAZE 1K JA 1/16W
R134	401 105 0514	MT-GLAZE 1K JA 1/16W
R135	401 105 5212	MT-GLAZE 470 JA 1/16W
R136	401 105 0415	MT-GLAZE 100 JA 1/16W
R137	401 105 5212	MT-GLAZE 470 JA 1/16W
R138	401 105 5212	MT-GLAZE 470 JA 1/16W
R139	401 105 3119	MT-GLAZE 27 JA 1/16W
R140	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
R141	401 105 6011	MT-GLAZE 5.6K JA 1/16W
R142	401 105 0514	MT-GLAZE 1K JA 1/16W
R143	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
R144	401 105 2716	MT-GLAZE 220 JA 1/16W
R149	401 027 2125	CARBON 56 JA 1/6W
R153	401 105 5212	MT-GLAZE 470 JA 1/16W
R154	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
R157	401 105 0613	MT-GLAZE 10K JA 1/16W
R158	401 105 4710	MT-GLAZE 39K JA 1/16W
R1901	401 105 1610	MT-GLAZE 15K JA 1/16W
R1902	401 105 7414	MT-GLAZE 8.2K JA 1/16W
R1903	401 105 5311	MT-GLAZE 4.7K JA 1/16W
R1905	401 105 3317	MT-GLAZE 2.7K JA 1/16W
R1906	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R1908	401 026 3935	CARBON 330 JA 1/6W 52MM
R1909	401 105 1511	MT-GLAZE 1.5K JA 1/16W
R1910	401 105 0613	MT-GLAZE 10K JA 1/16W
R201	401 105 1412	MT-GLAZE 150 JA 1/16W
R202	401 105 3416	MT-GLAZE 27K JA 1/16W
R211	401 105 0415	MT-GLAZE 100 JA 1/16W
R212	401 026 0627	CARBON 270 JA 1/6W
R213	401 105 3010	MT-GLAZE 220K JA 1/16W
R214	401 024 6720	CARBON 1 00 JA 1/6W 26MM
R215	401 024 6720	CARBON 100 JA 1/6W 26MM
R216	401 105 0613	MT-GLAZE 10K JA 1/16W
R217	401 024 7430	CARBON 10K JA 1/6W
R230	401 105 4215	MT-GLAZE 33K JA 1/16W
R234	401 024 6720	CARBON 100 JA 1/6W 26MM
R235	401 024 6720	CARBON 100 JA 1/6W 26MM
R236	401 024 6720	CARBON 100 JA 1/6W 26MM
R237	401 024 6720	CARBON 100 JA 1/6W 26MM
R238	401 105 0415	MT-GLAZE 100 JA 1/16W
R239	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R240	401 105 0415	MT-GLAZE 100 JA 1/16W
R241	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R242	401 105 0415	MT-GLAZE 100 JA 1/16W
R243	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R244	401 105 4017	MT-GLAZE 330 JA 1/16W
R245	401 218 4614	MT-GLAZE 5.6K FA 1/16W
R246	401 105 4710	MT-GLAZE 39K JA 1/16W
R247	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
R248	401 105 7513	MT-GLAZE 82K JA 1/16W
R251	401 105 1214	MT-GLAZE 120K JA 1/16W
R253	401 024 7727	CARBON 100K JA 1/6W
R254	401 105 0712	MT-GLAZE 100K JA 1/16W
R255	401 105 8114	MT-GLAZE 56K JA 1/16W
R256	401 105 0514	MT-GLAZE 1K JA 1/16W
R257	401 105 0514	MT-GLAZE 1K JA 1/16W
R258	401 105 0514	MT-GLAZE 1K JA 1/16W
R3441	401 105 0613	MT-GLAZE 10K JA 1/16W
R3442	401 105 0613	MT-GLAZE 10K JA 1/16W
R3443	401 105 0613	MT-GLAZE 10K JA 1/16W

Ref. No.	Part No.	Description
R3444	401 105 0613	MT-GLAZE 10K JA 1/16W
R3451	401 024 6720	CARBON 100 JA 1/6W 26MM
R3452	401 024 6720	CARBON 100 JA 1/6W 26MM
R3453	401 105 0613	MT-GLAZE 10K JA 1/16W
R3471	401 105 3218	MT-GLAZE 270 JA 1/16W
R3473	401 105 5212	MT-GLAZE 470 JA 1/16W
R3474	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R3475	401 105 5212	MT-GLAZE 470 JA 1/16W
R3476	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R3485	401 105 5212	MT-GLAZE 470 JA 1/16W
R3486	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R3487	401 105 5212	MT-GLAZE 470 JA 1/16W
R3488	401 105 2815	MT-GLAZE 2.2K JA 1/16W
R430	401 065 2808	OXIDE-MT 120 JA 2W
R432	401 105 0514	MT-GLAZE 1K JA 1/16W
R433	401 007 1134	CARBON 1K JA 1/2W
R434	401 105 0415	MT-GLAZE 100 JA 1/16W
⚠ R435	402 068 0204	WIRE WOUND 10 JA 5W
R436	401 012 7049	CARBON 10K JA 1/4W
R437	401 105 4017	MT-GLAZE 330 JA 1/16W
R441	401 058 3706	OXIDE-MT 1K JA 1W
R447	401 026 9927	CARBON 4K7 JA 1/6W
R448	401 009 5843	CARBON 330 JA 1/2W
R450	401 025 1922	CARBON 15K JA 1/6W
⚠ R451	401 064 5305	OXIDE-MT 1.5 JA 2W
R453	401 024 7024	CARBON 1K JA 1/6W
R454	401 014 6149	CARBON 150K JA 1/4W
R455	401 019 4031	CARBON 390K JA 1/4W
R461	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
R464	401 026 9927	CARBON 4K7 JA 1/6W
R469	401 026 1327	CARBON 27K JA 1/6W
R470	401 024 7727	CARBON 100K JA 1/6W
R471	401 027 5225	CARBON 680 JA 1/6W
R473	401 027 5225	CARBON 680 JA 1/6W
R474	401 009 0927	CARBON 270 JA 1/2W
R481	401 016 5843	CARBON 220K JA 1/4W
R482	401 027 5522	CARBON 6K8 JA 1/6W
R504	401 105 8114	MT-GLAZE 56K JA 1/16W
R505	401 025 4626	CARBON 18K JA 1/6W
R506	401 024 7430	CARBON 10K JA 1/6W
R507	401 027 8127	CARBON 82 JA 1/6W
⚠ R509	401 057 7507	OXIDE-MT 0.82 JA 1W
⚠ R512	401 062 1200	OXIDE-MT 470 JA 1W
⚠ R515	402 037 1805	FUSIBLE RES 4.7 J- 1W
⚠ R518	401 062 1200	OXIDE-MT 470 JA 1W
R523	401 105 5311	MT-GLAZE 4.7K JA 1/16W
⚠ R602	402 070 9806	WIRE W. ERF-5ZYK1R8
R611	401 027 2620	CARBON 5K6 JA 1/6W
R615	401 025 8228	CARBON 22K JA 1/6W
R617	401 024 9325	CARBON 1K2 JA 1/6W 26MM
R619	401 016 1538	CARBON 22 JA 1/4W
R620	401 007 5815	CARBON 120K JA 1/2W
R621	401 007 5815	CARBON 120K JA 1/2W
R622	401 014 5241	CARBON 15K JA 1/4W
R623	401 026 4328	CARBON 3K3 JA 1/6W
⚠ R625	401 065 9609	OXIDE-MT 18 JA 2W
R626	401 015 2219	CARBON 1.8K GA 1/4W
⚠ R628	401 068 6902	OXIDE-MT 56 JA 2W
⚠ R631	402 000 8602	SOLID 5.6M KA 1/2W 52AMMO
⚠ R632	402 000 8602	SOLID 5.6M KA 1/2W 52AMMO
R636	401 024 7430	CARBON 10K JA 1/6W
⚠ R637	402 067 3305	WIRE WOUND 4.7 KA 5W
R641	401 027 4307	CARBON 6.2K JA 1/6W
R642	401 014 6149	CARBON 150K JA 1/4W
R643	401 009 3116	CARBON 3.3JA 1/2W 52MM
⚠ R644	401 065 9609	OXIDE-MT 18 JA 2W
R645	401 016 4836	CARBON 22K JA 1/4W
R646	401 015 4738	CARBON 180K JA 1/4W
R647	401 011 2718	CARBON 68K JA 1/2W
⚠ R648	401 067 4206	OXIDE-MT 33 JA 2W

Ref. No.	Part No.	Description
R651	401 012 7049	CARBON 10K JA 1/4W
R652	401 021 3049	CARBON 5.6K JA 1/4W
R653	401 105 2914	MT-GLAZE 22K JA 1/16W
R654	401 105 0613	MT-GLAZE 10K JA 1/16W
R661	401 012 7049	CARBON 10K JA 1/4W
R663	401 013 5341	CARBON 1K2 JA 1/4W
R666	401 062 5109	OXIDE-MT 56 JA 1W
R667	401 027 2333	CARBON 560 JA 1/6W 52MM
R668	401 008 8627	CARBON 220K JA 1/2W
R681	401 105 0613	MT-GLAZE 10K JA 1/16W
R686	401 016 5843	CARBON 220K JA 1/4W
R687	401 105 6110	MT-GLAZE 560K JA 1/16W
R688	401 105 0613	MT-GLAZE 10K JA 1/16W
R689	401 105 2914	MT-GLAZE 22K JA 1/16W
R808	401 105 0415	MT-GLAZE 100 JA 1/16W
R815	401 024 6720	CARBON 100 JA 1/6W 26MM
R823	401 024 6720	CARBON 100 JA 1/6W 26MM
R824	401 024 6720	CARBON 100 JA 1/6W 26MM
R827	401 024 6720	CARBON 100 JA 1/6W 26MM
R829	401 105 4215	MT-GLAZE 33K JA 1/16W
R830	401 105 4215	MT-GLAZE 33K JA 1/16W
R831	401 024 7430	CARBON 10K JA 1/6W
R832	401 024 7430	CARBON 10K JA 1/6W
R838	401 105 6011	MT-GLAZE 5.6K JA 1/16W
R839	401 105 6011	MT-GLAZE 5.6K JA 1/16W
R840	401 024 7024	CARBON 1K JA 1/6W
R842	401 105 1610	MT-GLAZE 15K JA 1/16W
R843	401 105 2716	MT-GLAZE 220 JA 1/16W
R844	401 105 2716	MT-GLAZE 220 JA 1/16W
R845	401 105 2716	MT-GLAZE 220 JA 1/16W
R846	401 105 2013	MT-GLAZE 1.8K JA 1/16W
R847	401 105 3317	MT-GLAZE 2.7K JA 1/16W
R848	401 105 3317	MT-GLAZE 2.7K JA 1/16W
R849	401 105 3317	MT-GLAZE 2.7K JA 1/16W
R851	401 105 1917	MT-GLAZE 180 JA 1/16W
R852	401 105 3416	MT-GLAZE 27K JA 1/16W
R853	401 105 2914	MT-GLAZE 22K JA 1/16W
R854	401 026 9927	CARBON 4K7 JA 1/6W
R855	401 027 5522	CARBON 6K8 JA 1/6W
R856	401 105 6011	MT-GLAZE 5.6K JA 1/16W
R857	401 105 4215	MT-GLAZE 33K JA 1/16W
R859	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
R860	401 105 3218	MT-GLAZE 270 JA 1/16W
R861	401 105 6516	MT-GLAZE 680 JA 1/16W
R862	401 105 7414	MT-GLAZE 8.2K JA 1/16W
R863	401 105 1610	MT-GLAZE 15K JA 1/16W
R872	401 105 0613	MT-GLAZE 10K JA 1/16W
R873	401 105 0613	MT-GLAZE 10K JA 1/16W
R874	401 105 5212	MT-GLAZE 470 JA 1/16W
R875	401 026 9620	CARBON 470 JA 1/6W 26MM
R876	401 105 4512	MT-GLAZE 390 JA 1/16W
R877	401 105 1016	MT-GLAZE 1.2K JA 1/16W
R878	401 105 0514	MT-GLAZE 1K JA 1/16W
R880	401 105 4710	MT-GLAZE 39K JA 1/16W
R881	401 105 0514	MT-GLAZE 1K JA 1/16W

TRANSFORMER

⚠ T431	610 000 1077	DRIVE TRANS
⚠ T451	645 038 7616	TRANS,FLYBACK EB6 4X3 28
⚠ T611	645 047 8024	TRANS 10735340P1 SMT4

VARIABLE RESISTOR

VR641	645 006 5514	VR,SEMI,2.2K N

MISCELLANEOUS

A101	645 040 4528	TUNER,U/V
A1901	645 028 1044	REMO REC SPS-443-1-E
⚠ F601	423 022 2102	FUSE 250V 4.0A
F601A	645 000 5077	HOLDER,FUSE
F601B	645 000 5077	HOLDER,FUSE

Ref. No.	Part No.	Description
JS100	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
JS101	401 105 2716	MT-GLAZE 220 JA 1/16W
JS102	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
JS116	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
JS3471	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
JS443	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
JS601	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
JS806	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J107	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J1215	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J1216	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J1218	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J1219	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J204	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J224	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J240	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J243	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J245	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J325	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J332	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J334	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J335	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J336	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J346	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J408	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J416	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J519	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J520	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J521	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J530	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J531	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J532	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J539	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J617	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J624	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J631	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J639	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J640	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
J840	401 105 7919	MT-GLAZE 0.000 ZA 1/16W
KCPA	645 006 1905	HSG PLUG 5P S5B-XH-A JST
KDY-1	645 008 4058	TERMINAL PLUG
KDY-3	645 008 4058	TERMINAL PLUG
KDY-5	645 008 4058	TERMINAL PLUG
KDY-6	645 008 4058	TERMINAL PLUG
⚠ KE-1	645 008 4058	TERMINAL PLUG
KE-2	645 008 4058	TERMINAL PLUG
⚠ KF-1	645 008 4058	TERMINAL PLUG
KF-2	645 008 4058	TERMINAL PLUG
KGG-1	645 008 4058	TERMINAL PLUG
KGG-2	645 008 4058	TERMINAL PLUG
KL	645 004 2881	PLUG,2P
KP	645 008 7288	HOUSING PLUG 5P
KQ	645 008 7264	HOUSING PLUG 3P
KR-1	645 008 4058	TERMINAL PLUG
KR-2	645 008 4058	TERMINAL PLUG
K1001	645 005 5867	21-PIN SOCKET
K1002	645 005 5867	21-PIN SOCKET
PS601	408 013 3801	TH PTH451C262BF140M270
SW1901	610 011 4432	SWITCH,PUSH
SW1902	610 011 4432	SWITCH,PUSH
SW1903	610 011 4432	SWITCH,PUSH
SW1904	610 011 4432	SWITCH,PUSH
SW501	610 011 2728	SWITCH,LEVER 1P-3T
⚠ SW601	645 024 0607	PUSH SW POWER SDDFC3
TP-A	645 008 4058	TERMINAL PLUG
TP-B	645 008 4058	TERMINAL PLUG
X121	645 028 1136	TRAP,C.TW02B 5.5 & 6.5M
X131A	421 007 8606	SAW F TSB5387P
X132	421 008 8001	SAW F TSF5330U1
X231	645 025 1122	XTAL 4.433619MHZ 16PF KSS

Ref. No.	Part No.	Description
X3451	645 024 7484	OSC,CRYSTAL 24.576MHZ
X801	610 282 0201	XTAL. OSC 4.00MHZ 5MM
Z101	610 282 9693	SHD.CASE EB6 6 CUTT+5HOLE
Z102	610 282 9709	SHIELD CASE C2HC-B

1AA0B10H047B0 ASSY,PWB,HARMONICS EB6 AC

COIL

⚠ L1601	645 042 6735	CHOKE, ETQR42T004B PANA

MISCELLANEOUS

⚠ K16H-1	645 008 4058	TERMINAL PLUG
⚠ K16H-2	645 008 4058	TERMINAL PLUG

1AA0B10E595B0 ASSY,PWB,CRT C2WBV

CAPACITOR

C702	403 074 5712	CERAMIC	560P K 50V
C712	403 074 5712	CERAMIC	560P K 50V
C722	403 074 5712	CERAMIC	560P K 50V
C731	403 077 2728	CERAMIC	1000P P 2K
C732	403 074 5712	CERAMIC	560P K 50V
C733	610 237 1000	PIPE CORE	
C735	403 281 1108	ELECT	22U M 250V
C751	403 201 5011	ELECT	330U M 16V

DIODE

D701	407 012 4416	DIODE 1SS133-T-77
D711	407 012 4416	DIODE 1SS133-T-77
D721	407 012 4416	DIODE 1SS133-T-77
D751	407 012 4416	DIODE 1SS133-T-77

COIL

L701	645 007 9856	PEAKING COIL 220UH K
L711	645 007 9856	PEAKING COIL 220UH K
L712	645 007 9856	PEAKING COIL 220UH K

TRANSISTOR

Q701	405 041 6507	TR 2SC2621-D-RA
Q711	405 041 6507	TR 2SC2621-D-RA
Q721	405 041 6507	TR 2SC2621-D-RA
Q740	406 007 1901	TR JC556A
Q751	406 007 1901	TR JC556A

RESISTOR

R702	401 025 7429	CARBON	220 JA 1/6W
⚠ R704	401 065 4604	OXIDE-MT	12K JA 2W
R705	401 009 6622	CARBON	3.3K JA 1/2W
R712	401 025 7429	CARBON	220 JA 1/6W
⚠ R714	401 065 4604	OXIDE-MT	12K JA 2W
R715	401 009 6622	CARBON	3.3K JA 1/2W
R722	401 025 7429	CARBON	220 JA 1/6W
⚠ R724	401 065 4604	OXIDE-MT	12K JA 2W
R725	401 009 6622	CARBON	3.3K JA 1/2W
R741	401 024 9325	CARBON	1K2 JA 1/6W 26MM
R742	401 027 2620	CARBON	5K6 JA 1/6W
R744	401 027 5225	CARBON	680 JA 1/6W
R752	401 024 7430	CARBON	10K JA 1/6W
R753	401 024 7430	CARBON	10K JA 1/6W
R756	401 026 9620	CARBON	470 JA 1/6W 26MM
R758	401 026 9620	CARBON	470 JA 1/6W 26MM
R759	401 026 9620	CARBON	470 JA 1/6W 26MM

MISCELLANEOUS

K7D1	645 008 4058	TERMINAL PLUG
K7M	645 008 4058	TERMINAL PLUG
K7P	645 008 7288	HOUSING PLUG 5P
K7Q	645 008 7264	HOUSING PLUG 3P
⚠ K701	645 031 7699	CRT SKT. HPS-014103

Ref. No.	Part No.	Description

All information in this manual is correct at the start of production. Sanyo reserves the right to modify components and procedures in order to comply with their continuous improvement policy.

ASSY,PWB,NICAM&SW C2HA (1AA0B10E59200)

PWB,NICAM&SW C2HA (1AA4B10E25300)

IC301 TDA9181

IC1201 MM1313BD

IC3451 TDA9873AV/V2

IC3501 MM1369BD

IC3521

IC3102 BA178M05T / BA178M05FP / NJM78M05CT

<AV-SELECTOR>

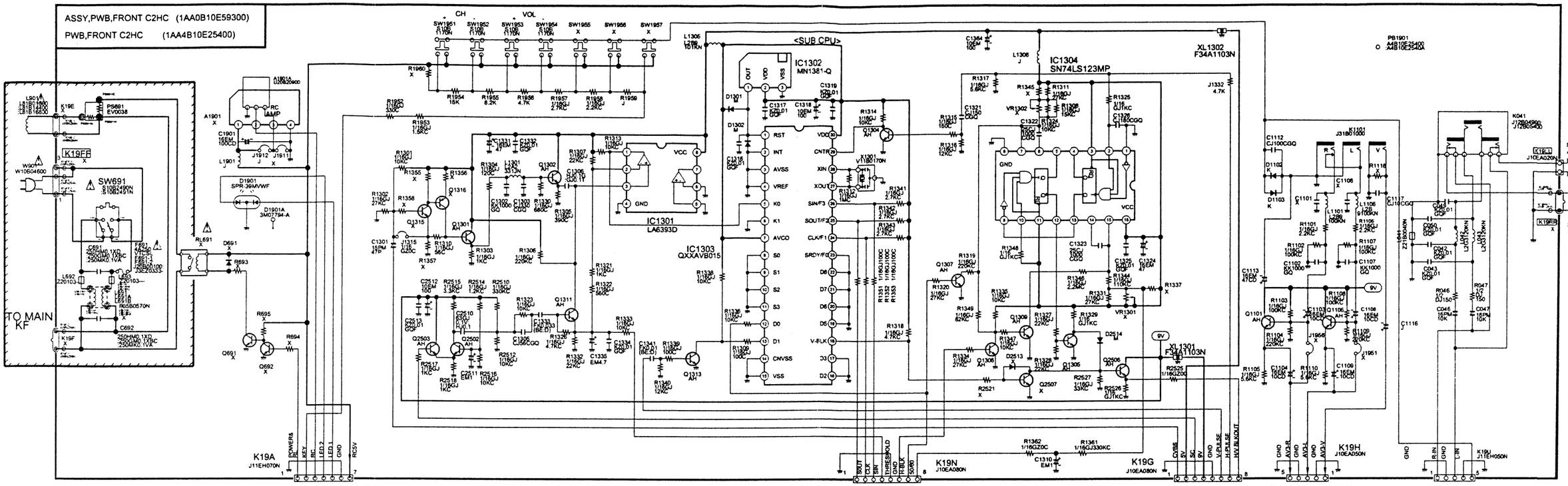
TV_IN (MAIN) FRONT IN | SC2 IN | SC1 IN | TV_IN (PIP SUB) | PIP SUB-OUT

TO MAIN KJ

TO FORNT K19H

TO MAIN KM

ASSY,PWB,FRONT C2HC (1AA0B10E59300)
PWB,FRONT C2HC (1AA4B10E25400)



The service Precaution:
The area enclosed by this line (⚠) is directly connected with AC mains voltage. When servicing the area, connect an isolating transformer between TV receiver and AC line to eliminate hazard of electric shock.

Product safety notice:
Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by a mark ⚠ in this circuit diagram show components whose values have special significance to product safety. It is particularly recommended that only parts specified on the part service manual be used for components replacement pointed out by the mark.

Circuit diagram notes :
1. All resistance values are in ohms. K=1,000, M=1,000,000.
2. All resistance rated wattages are 1/6W unless otherwise noted.
3. Excepting electrolytic capacitors, all capacitance values of less than 1 are expressed in μF and more than 1 are pF.
4. All capacitance rated voltages are 50V unless otherwise noted.
5. All inductance values are in μH.
6. Voltage readings taken a digital voltmeter are from point indicated chasses ground. Voltage readings taken by using a colour bar signal are with all controls at normal position. Some voltages may vary with signal strength.
7. Waveforms were taken with colour bar and controls adjusted for normal picture. Waveforms were taken by using a wide band oscilloscope and a low capacity probe.
8. The circuit diagram covers a basic or representative chassis only. There may be some components or partial circuit differences between the actual chassis and the circuit diagram.
9. ■ Diode 1S1555 may be replaced with 1S2473, 1S2076 or DS472 unless otherwise noted.
   ■ Transistor 2SC536(Q,R,S), 2SC1740(Q,R,S), 2SC945A(Q,R,P) or 2SC1815(G,O,Y) unless otherwise noted.
   ■ Transistor 2SA608(E,F) may be replaced with 2SA933(C,R), 2SA564(CA,RA), or 2SA1015(O,Y) unless otherwise noted

Expression of capacitance and resistance in circuit diagram.

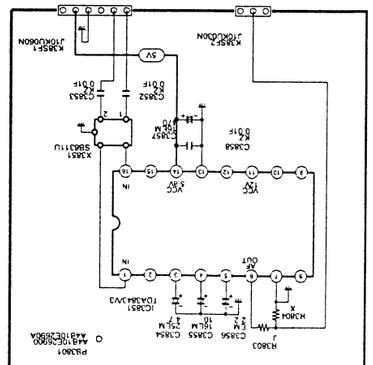
Capacitance (Example)
1000 C M 2000 D
- Characteristic
- Capacitance value (220pF)
- Tolerance (±20%) — J = ± 5%, K = ± 10%, M = ± 20%
- Kind(Ceramic) — T, A, U, D : Electrolytic; C, K, B : Ceramic; F : Mylar film; M, N : Polypropylene; Z : Metallized paper
- Rated voltage (1,000V)

Resistance (Example)
1/2 N J 1.2
- Resistance value (1.2Ω)
- Tolerance (±5%)
- Kind (M carbon) — D : Carbon; N : Metallized carbon; S : Oxide metallized; W : Wire wounding; C : Solid
- Rated wattage(1/2W)

Terminal guide

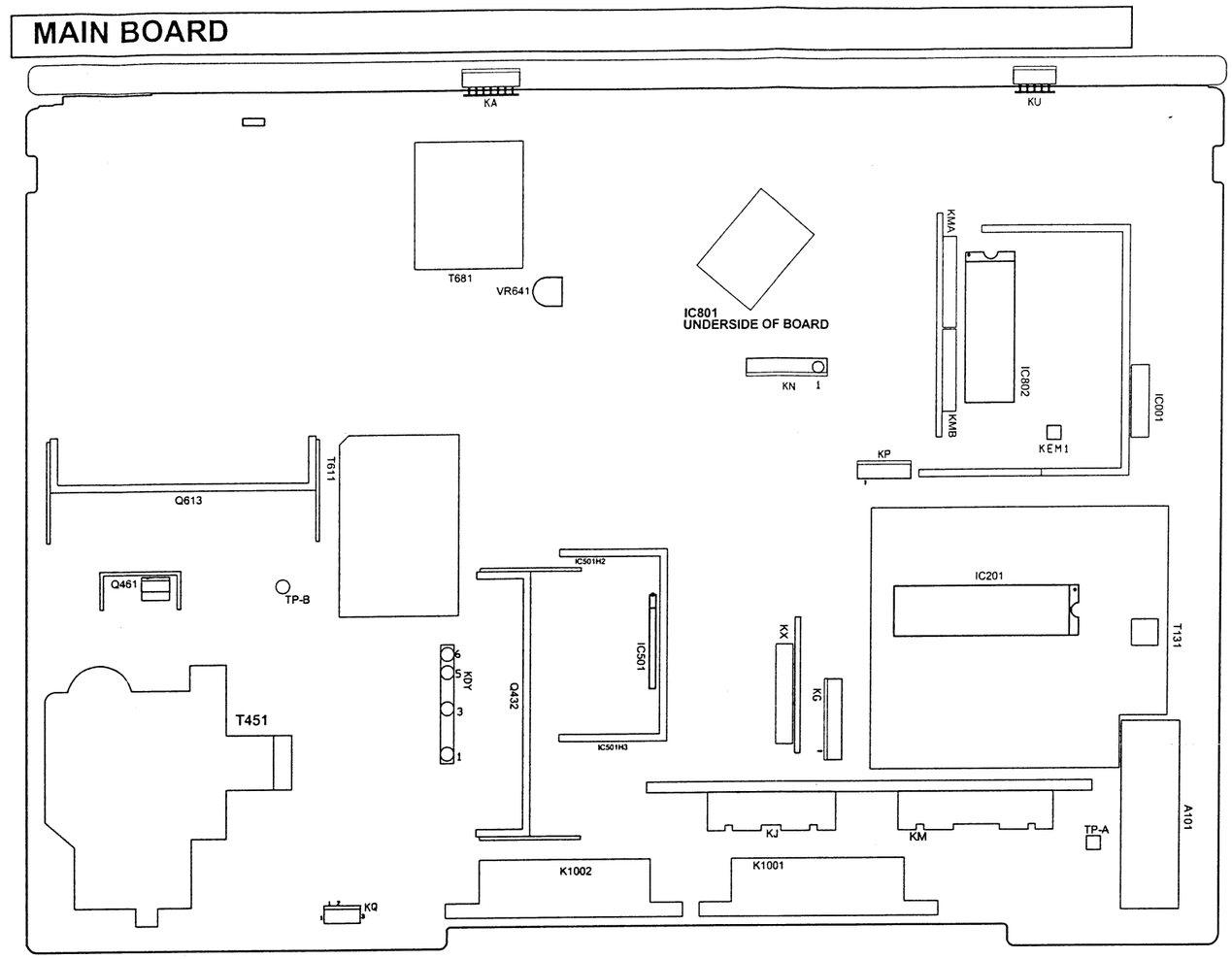
C : Collector
B : Base
E : Emitter
A : Anode
K : Kathode

Chip Components

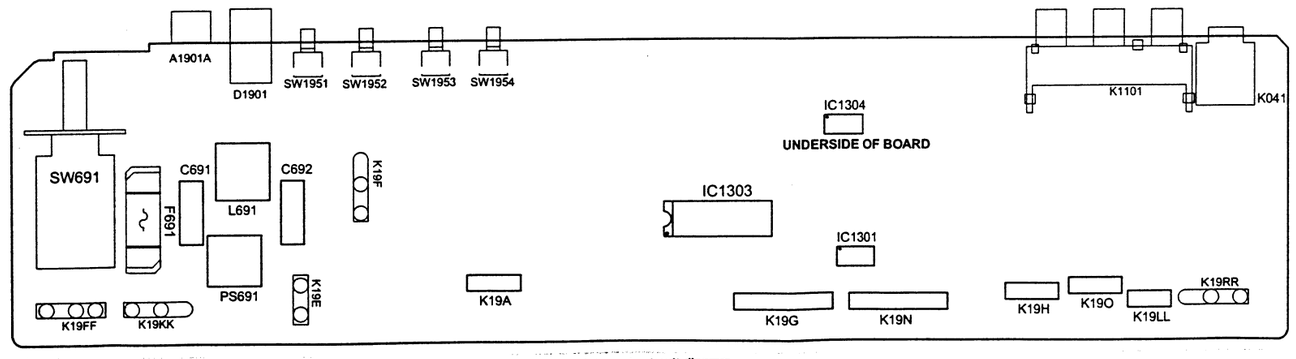


ASSY,PWB,AM-SIF C2WLV (1AA0B10E63800)
PWB,AM-SIF C2WLV (1AA4B10E26900)

MAIN BOARD



FRONT BOARD



The service Precaution:
The area enclosed by this line (⚡⚡⚡) is directly connected with AC mains voltage. When servicing the area, connect an isolating transformer between TV receiver and AC line to eliminate hazard of electric shock.

Product safety notice:
Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by a mark ⚠ in this circuit diagram show components whose values have special significance to product safety. It is particularly recommended that only parts specified on the part service manual be used for components replacement pointed out by the mark.

Circuit diagram notes :
1. All resistance values are in ohms, K=1,000, M=1,000,000.
2. All resistance rated wattages are 1/6W unless otherwise noted.
3. Excepting electrolytic capacitors, all capacitance values of less than 1 are expressed in μF and more than 1 are pF.
4. All capacitance rated voltages are 50V unless otherwise noted.
5. All inductance values are in μH.
6. Voltage readings taken a digital voltmeter are from point indicated chassis ground. Voltage readings taken by using a colour bar signal are with all controls at normal position. Some voltages may vary with signal strength.
7. Waveforms were taken with colour bar and controls adjusted for normal picture. Waveforms were taken by using a wide band oscilloscope and a low capacity probe.
8. This circuit diagram covers a basic or representative chassis only. There may be some components or partial circuit differences between the actual chassis and the circuit diagram.
9. ■ Diode 1S1555 may be replaced with 1S2473, 1S2076 or DS472 unless otherwise noted.
   ■Transistor 2SC536(Q,R,S), 2SC1740(Q,R,S), 2SC945A(Q,R,P) or 2SC1815(G,O,Y) unless otherwise noted.
   ■ Transistor 2SA608(E,F) may be replaced with 2SA933(Q,R), 2SA564(QA,RA), or 2SA1015(O,Y) unless otherwise noted.

Expression of capacitance and resistance in circuit diagram.

Capacitance (Example)
1000 C M 2000 D
- Characteristic
- Capacitance value (220pF)
- Tolerance (±20%)
- Kind(Ceramic)
- Rated voltage (1,000V)

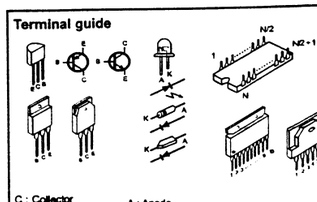
J= ± 5%
K= ± 10%
M= ± 20%

T, A, U, D : Electrolytic
C, K, B : Ceramic
F : Mylar film
M, N : Polypropylene
Z : Metallized paper

Resistance (Example)
1/2 N J 1.2
- Resistance value (1.2Ω)
- Tolerance (±5%)
- Kind (M.carbon)
- Rated wattage(1/2W)

D : Carbon
N : Metallized carbon
S : Oxide metallized
W : Wire wounding
C : Solid

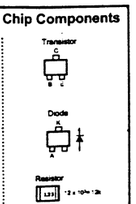
Terminal guide



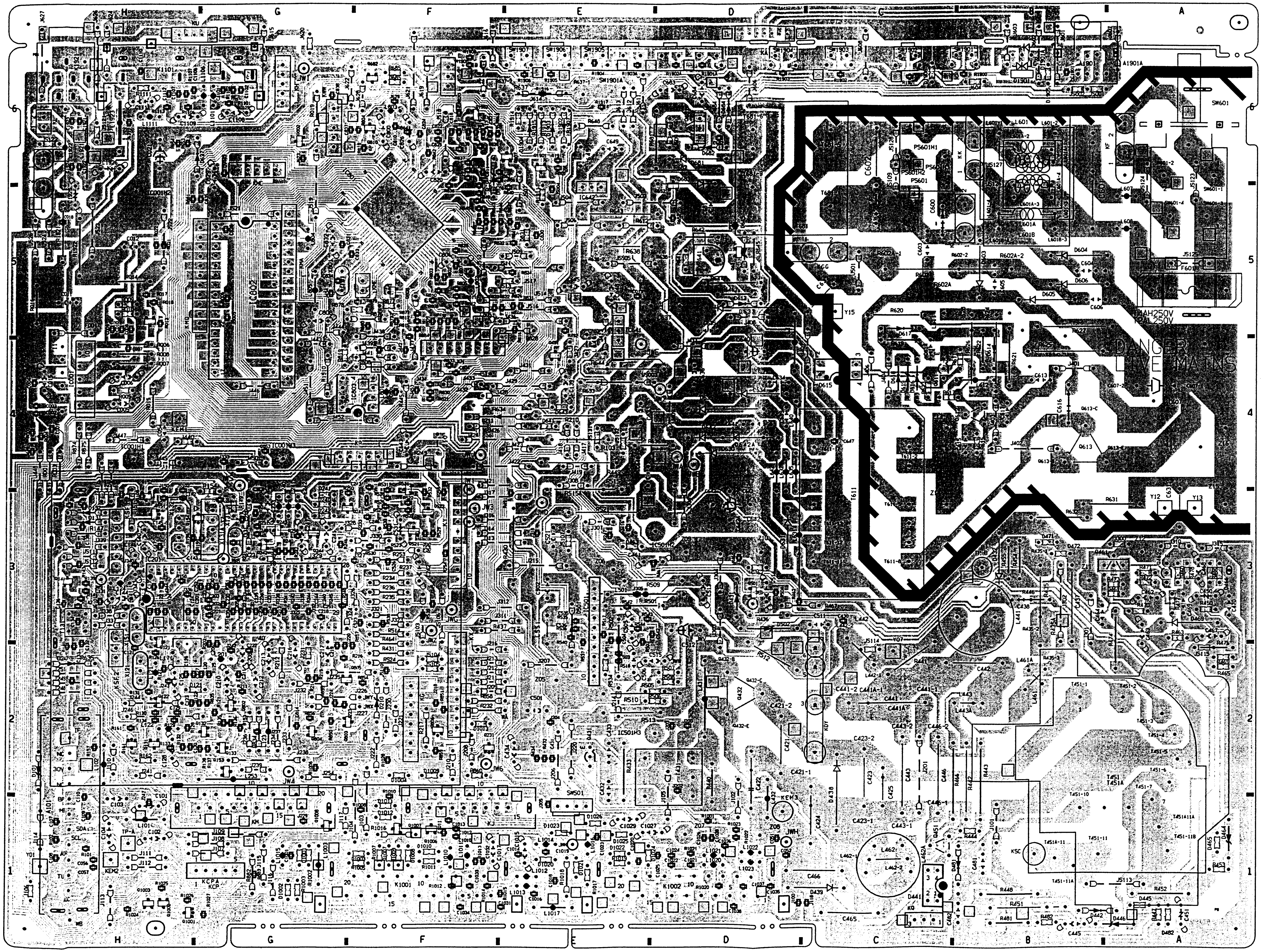
C : Collector
B : Base
E : Emitter

A : Anode
K : Kathode

Chip Components



MAIN BOARD



ASSY,PWB,NICAM&SW C2HA (1AA0B10E59200)

PWB,NICAM&SW C2HA (1AA4B10E25300)

IC301 X TDA9181

IC1201 MM1313BD

IC3451 TDA9875A/V2

IC3501 MM1369BD

IC3521

<AV-SELECTOR>

TV_IN (MAIN) FRONT IN

SC2 IN

SC1 IN

TV_IN (PIP SUB)

PIP SUB-OUT

TO MAIN KJ

TO FORNT K19H

TO MAIN KM

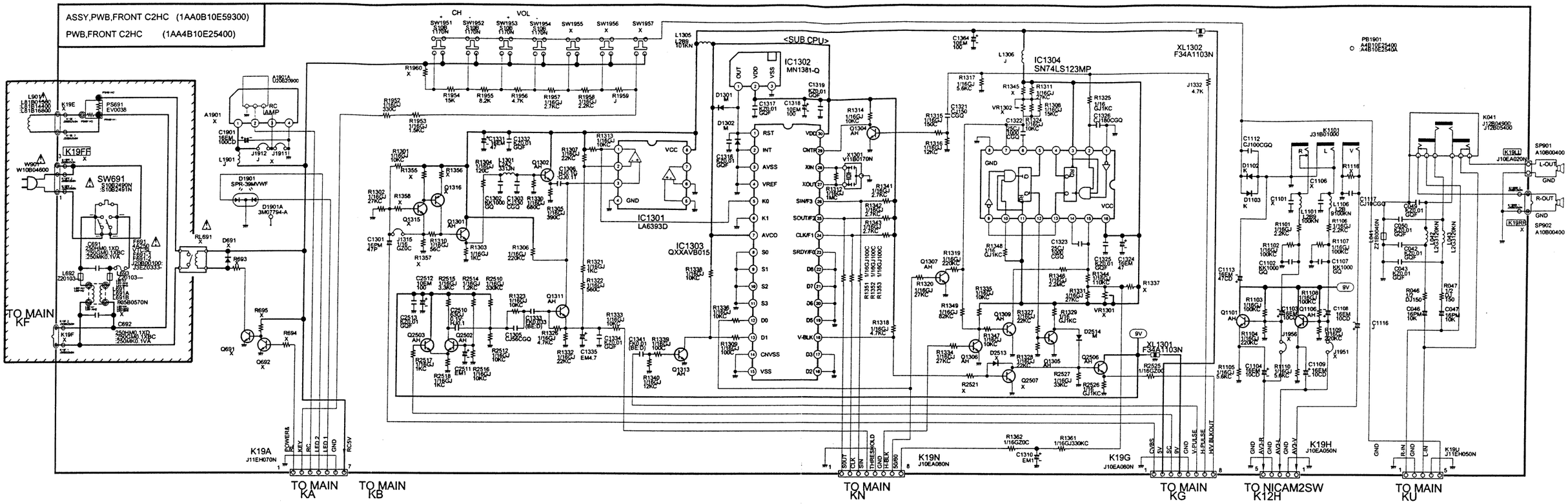
K12H J10AR050N

K12J J10EU151N

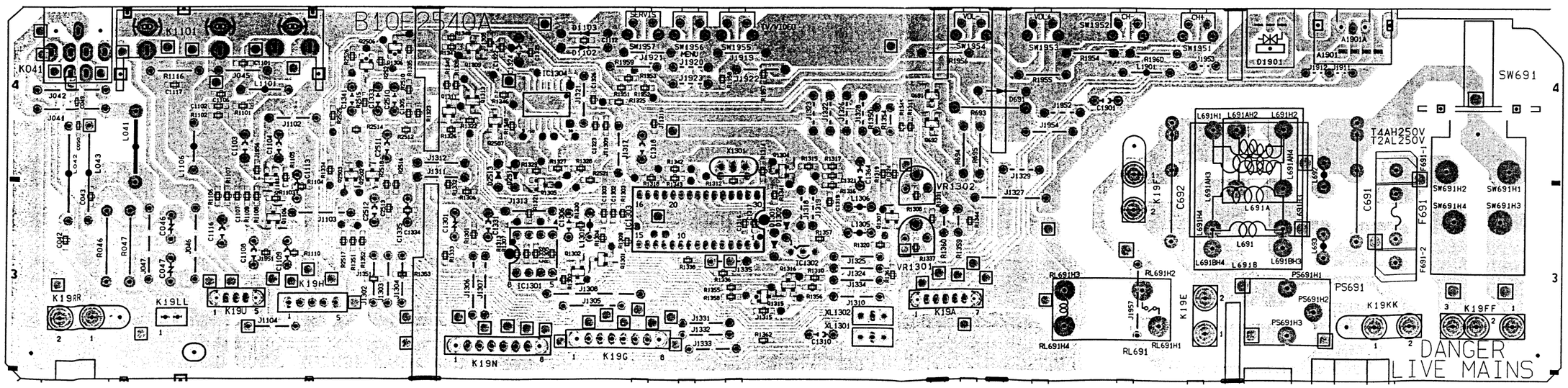
K12M J10EU201N

ASSY,PWB,FRONT C2HC (1AA0B10E59300)

PWB,FRONT C2HC (1AA4B10E25400)



FR0NT BOARD



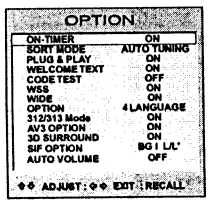
OPTION SETTING

[After replacing the Memory IC (IC803)]

The memory IC, IC803, stores the option data of TV set and service adjustments data for each circuit, therefore, when the memory IC is replaced, it should be performed following setting and "SERVICE ADJUSTMENT" on next page.

To enter to the Option Mode

+ Press and hold the **F/OK** button on the remote control and **P ▼** button on the front panel of the TV. The option window will appear on the screen. Enter the settings as shown below.



To set the option mode

+ Highlight the desired option item by using the **P▲** or **P▼** button .
+ To switch the option mode, use the **Volume - (LEFT)** or **Volume + (RIGHT)** button.
+ The data which is set in the option mode is stored into the memory IC automatically.

Following table shows the available option items and default setting mode.

Option Mode	Mode	Description & Note
ON-TIMER	ON or OFF	On-timer available, default "ON"
SORT MODE	AUTO TUNE/SORT or AUTO TUNING or ATS EURO PLUS	Tuning mode, default "AUTO TUNING"
PLUG & PLAY	ON or OFF	Plug & Play mode, default "ON"
WELCOME TEXT	ON or OFF	Display message when first set up, default "OFF"
CODE TEST	OFF or ON	For factory use, default "OFF"
WSS	ON or OFF	Wide Screen Signaling available, default "ON"
WIDE	ON or OFF	Wide mode, default "ON"
OPTION	4 LANGUAGE or ALL LANGUAG or GB ONLY	Destination option , default "4 LANGUAGE"
312/313 Mode	ON or OFF	Teletext mode, default OFF
AV3 OPTION	ON or OFF	Front AV disable, default ON
SIF OPTION	ON or OFF	Television system, default BG I L/L'
AUTO VOLUME	ON or OFF	Auto volume, default ON'

Exit from the Service Mode

+ Press the **RECALL** button.

SERVICE ADJUSTMENTS

Note: Some items of the service adjustments for this chassis are controlled by the CPU, IC801, and the adjustments are carried out by using the RC handset.

[After replacing the Memory IC (IC803)]

The memory IC, IC803, stores the service adjustments data for each circuit, therefore, when the memory IC is replaced, it should be performed "OPTION SETTING" on previous page and the following adjustments, refer to further adjustment on page 14.

ADJUSTABLE SERVICE ADJUSTMENT

REGULAR

Item No.	OSD	Description
1	AGC	AGC Adjustment
2	CUT	Cut-Off Drive Adjustment
3	GRY	G-Drive Adjustment
4	GRY	B-Drive Adjustment
7	HBP	H-Blanking Phase Adjustment
8	OSD	OSD Positioning Adjustment

WIDE

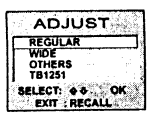
Item No.	OSD	Description
1	P V-P	Vertical Centre Adjustment
2	P H-P	Horizontal Centre Adjustment
5	P V-S	Vertical Size Adjustment
6	P H-S	Horizontal Size Adjustment
7	P PCC	Pcc Adjustment
8	P TRP	Trapezoid Distortion Adjustment
10	P CNR	Corner Adjustment

IMPORTANT NOTICE

Do not attempt to adjust service adjustments not listed on the above otherwise it may cause loss of performance and product safety.

To enter to the Service Mode

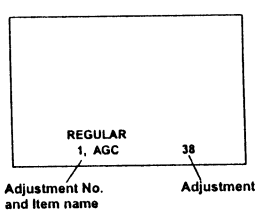
+ Press and hold the **GREEN** button on the remote control and then press the **P▼** button inside of the door. The adjustment window will appear on the screen.



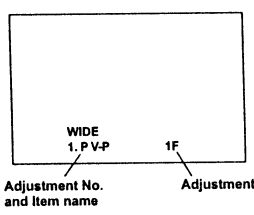
To select the mode and service item and change data value

+ Highlight the desired adjustment mode by using the **P▲** or **P▼** button and then press the **F/OK** button.
+ To select the adjustment item, use the **P▲** or **P▼** button.
+ To change the service data, use the **Volume -(LEFT)** or **Volume + (RIGHT)** button.
+ The data which is set in the service mode is stored into the memory IC automatically.

REGULAR mode



WIDE mode



Exit from the Service Mode

+ Press the **RECALL** button or turn off the TV set by using the Mains switch.

INITIALISATION OF MEMORY IC

To initialise the memory IC (IC803), press and hold the **NORMAL** button on te remote control and then press the **P▲** button on the front panel of the TV set, and then turn the Mains switch Off and On. Now the initialisation is completed.
When initialised the memory IC, all of the setting data (option data and service adjustment data) stored in the IC are reset to the default value. So it is necessary to set the option settings and readjust the service adjustments listed on left page.

ADJUSTMENTS

IMPORTANT NOTICE
Do not attempt to adjust the following service adjustments except when adjustments are required in servicing otherwise it may cause loss of performance and product safety.

+ B VOLTAGE ADJUSTMENT

1. Receive white raster pattern.
2. Set controls to normal.
3. Connect digital voltmetre to test point TP-B and GND.
4. Adjust voltage to 145 ±0.5V by using VR641.

AGC ADJUSTMENT

1. Input and tune an RF signal which is UHF ch31 551.25MHz with 63dBuV/75⎢ terminated signal gain.
2. Connect digital voltmetre to test point TP-A and GND.
4. Enter to the service mode and select mode "REGULAR", and select item no.1 "REGULAR 1, AGC".
5. Press the **LEVEL+** or **LEVEL -** button to adjust voltage to be 3.2Vdc.

+12V ADJUSTMENT

1. Receive white raster pattern.
2. Set controls to normal.
3. Connect digital voltmetre to pin 9 of IC3051 and GND.
4. Adjust voltage to 12 ±0.2V by using VR3031.

FOCUS ADJUSTMENT

By using FOCUS VR, adjust focus control for well defined scanning lines.

GREY SCALE ADJUSTMENT

SCREEN ADJUSTMENT

1. Receive black & white pattern.
2. Enter to the service mode and select mode "REGULAR", and select item no. 2 "REGULAR 2, CUT". The horizontal line will appear on the screen.
3. Set the SCREEN VR for one colour to be just visible.
4. Using the numeric buttons shown set each colour to minimum by decreasing to the point where any further decrease resets the adjustment to maximum value.

BIAS ADJUSTMENT

5. By using the buttons 1, 2, 4, 5, 7, 8 on the remote control, adjust the line to be white.

The key allocation is as follows;

Button No.	Operation
1	Increase Red
2	Decrease Red
4	Increase Green
5	Decrease Green
7	Increase Blue
8	Decrease Blue

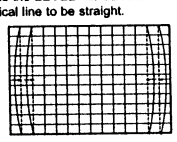
DRIVE ADJUSTMENT

6. Select item no.3 "REGULAR 3, GRY" (G-Drive) or 4 "REGULAR 4, GRY" (B-Drive) and adjust both initially to 3F.
7. Change data value of each item by using **LEVEL +** or **LEVEL -** button to obtain the proper white balance.

PCC ADJUSTMENT

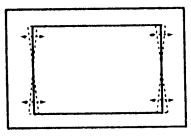
PCC ADJUSTMENT

1. Receive cross hatch pattern and set screen mode to "FULL".
2. Enter to the service mode and select mode "WIDE", and select item no. 7 "WIDE 7.P PCC".
3. Press the **LEVEL+** or **LEVEL -** button to adjust the vertical line to be straight.



TRAPEZOID ADJUSTMENT

1. Receive cross hatch pattern and set screen mode to "FULL".
2. Enter to the service mode and select mode "WIDE", and select item no. 8 "WIDE 8.P TRP".
3. Press the **LEVEL+** or **LEVEL -** button to correct the trapezum distortion of the vertical line.

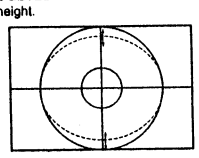


CORNER ADJUSTMENT

1. Receive cross hatch pattern and set screen mode to "FULL".
2. Enter to the service mode and select mode "WIDE", and select item no. 10 "WIDE 10.P CNR".
3. Press the **LEVEL+** or **LEVEL -** button to correct the distortion of the vertical line around the corners.

VERTICAL HEIGHT ADJUSTMENT

1. Receive circular pattern and set screen mode to "FULL".
2. Enter to the service mode and select mode "WIDE", and select item no. 5 "WIDE 5.P V-S.
3. Press the **LEVEL+** or **LEVEL -** button to adjust the vertical height.



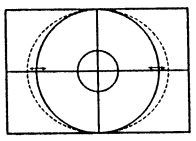
HORIZONTAL ADJUSTMENT

HORIZONTAL CENTRING ADJUSTMENT

1. Receive circular pattern and set screen mode to "FULL".
2. Enter to the service mode and select mode "WIDE", and select item no. 2 "WIDE 2.P H-P".
3. Press the **LEVEL+** or **LEVEL -** button to adjust the horizontal centre.

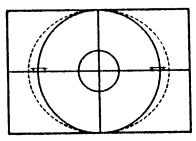
HORIZONTAL WIDTH ADJUSTMENT

1. Receive circular pattern and set screen mode to "FULL".
2. Enter to the service mode and select mode "WIDE", and select item 6 "WIDE 6.P H-W".
3. Press the **LEVEL+** or **LEVEL -** button to adjust the horizontal width.



H-BLANK ADJUSTMENT

1. Receive circular pattern .
2. Enter to the service mode and select mode "REGULAR", and select item no. 7 "REGULAR 7.HBF".
3. Press the **LEVEL+** or **LEVEL -** button to adjust the centre of picture image to be screen centre.

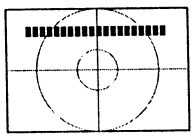


HIGH-VOLTAGE CONFIRMATION

1. Receive circular pattern and set screen mode to "FULL".
2. Set controls to normal.
3. Connect high-voltage meter to the anode of CRT and GND.
4. Confirm that voltage is 30.5±1.0kV for 32" model.
   Confirm that voltage is 29.5±1.0kV for 28" model.

OSD POSITIONING ADJUSTMENT

1. Receive circular pattern and set screen mode to "FULL".
2. Enter to the service mode and select mode "REGULAR", and select item no. 8 "REGULAR 8 OSD". The OSD test bar will appear on the top of screen.
3. Press the **LEVEL+** or **LEVEL -** button to adjust proper OSD positioning.



VERTICAL ADJUSTMENT

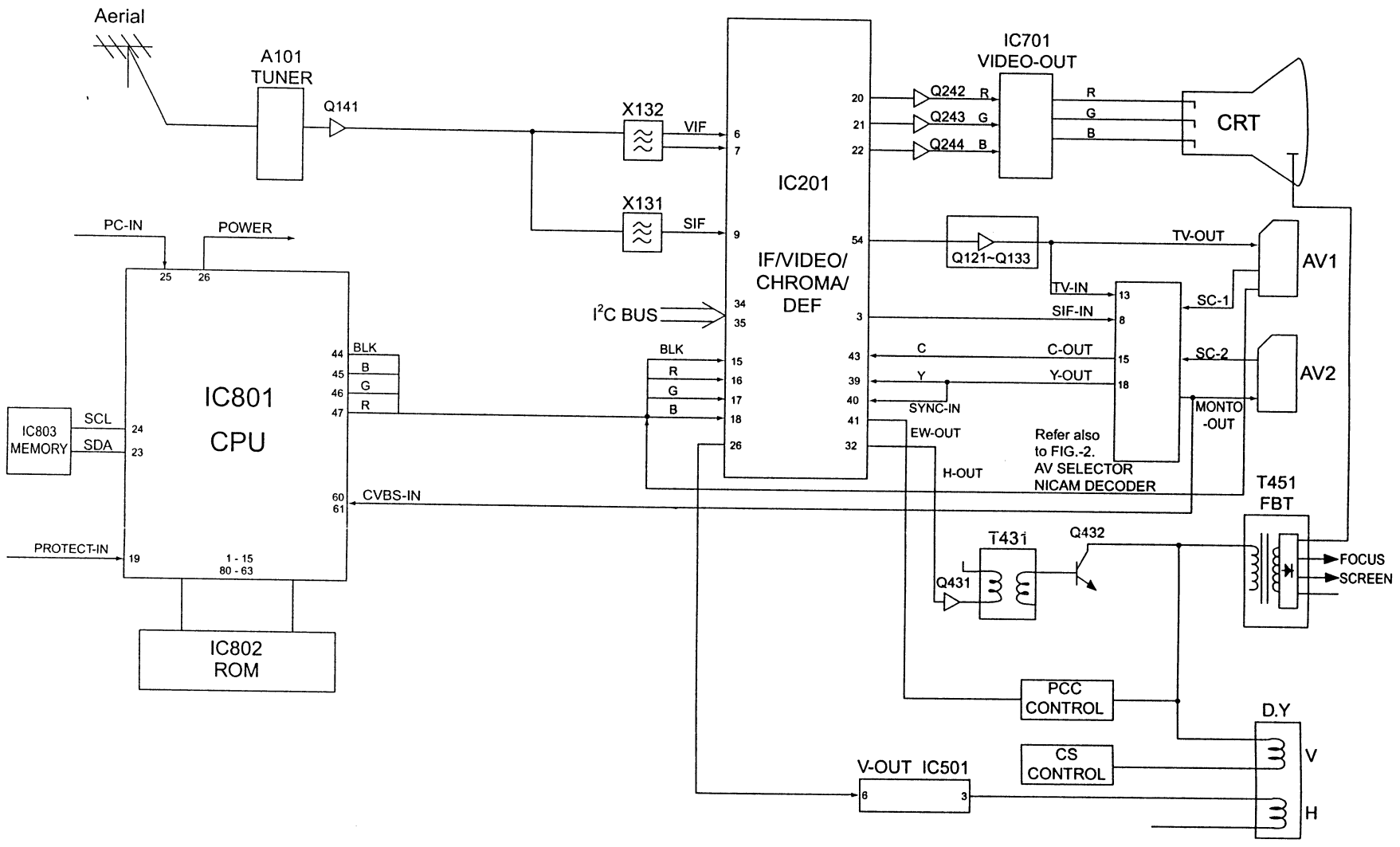
VERTICAL CENTRING ADJUSTMENT

1. Receive circular pattern and set screen mode to "FULL".
2. Enter to the service mode and select mode "WIDE", and select item no. 1 "WIDE 1.P V-P".
3. Press the **LEVEL+** or **LEVEL -** button to adjust the vertical centre.

CPU PORT FUNCTIONS

Pin No.	Function Name	Function	IN/OUT
1	MMU0	External memory 0	OUT
2	MMU3	External memory 3	OUT
3	ADDR10	Address bus 10	OUT
4	DSN	Data Strobe	
5	ADDR11	Address bus 11	OUT
6	ADDR9	Address bus 9	OUT
7	ADDR8	Address bus 8	OUT
8	R_WN	Read Write Strobe	
9	GND		
10	VDD	Power Supply	IN
11	OSC-IN	Clock Input	IN
12	OSC-OUT	Clock Output	OUT
13	ADDR13	Address bus 13	OUT
14	ADDR14	Address bus 14	OUT
15	MMU1	External memory 1	OUT
16	MMU2	External memory 2	OUT
17	MMU4	External memory 4	OUT
18	MMU5	External memory 5	OUT
19	P3.7/CSO	Protect - Power failure detect input	IN
20	P3.6/ASN	Dolby CLK(L/L')	OUT
21	P3.5	Dolby SO(Super 3D)	OUT
22	P3.4	PITTARI switch	OUT
23	P5.1	IIC BUS SDA	IN/OUT
24	P5.0	IIC BUS SCL	OUT
25	P2.0	Remote Control Signal Input	IN
26	P2.3	Power Relay & LED Drive On: L	OUT
27	P2.4	SUB CPU SO	OUT
28	P0.2	Key switch input	IN
29	P0.1	SUB CPU CLK	OUT
30	P0.0	SUB CPU SI	IN
31	P4.7	THRESHOLD switch	OUT
32	P4.6	JIMAKU(Caption) switch	OUT
33	P4.5	On-Timer LED Drive ON: L	OUT
34	VDD		IN
35	GND		
36	P2.1	AV1 Scart function input	IN
37	P2.2	AV2 Scart function input	IN
38	P2.5	RF AGC Input	IN
39	P4.4	H-Blank On/Off	OUT
40	P4.3	AMP Mute Mute On: H	OUT
41	P4.2	Dolby RQ	OUT
42	P4.1	H-Blank Phase	OUT
43	P4.0	50/60Hz output 50Hz: H	OUT
44	FB	BLK Output for OSD (Active H)	OUT
45	B	Blue Output for OSD (Active H)	OUT
46	G	Green Output for OSD (Active H)	OUT
47	R	Red Output for OSD (Active H)	OUT
48	V-SYNC	V-Sync Input (Active H)	IN
49	H-SYNC	H-Sync Input (Active H)	IN
50	WSCR	VPS/WSS Slicer Line PLL	
51	WSCF	VPS/WSS Slicer Line PLL	
52	VDD-A	Analogue Power Supply	IN
53	PXFM	Pixel Frequency Multiplier	
54	RESET	Reset Input (Active L)	IN
55	MCFM	Pixel Frequency Multiplier	
56	JTRSTO		
57	TXCF		
58	CVBS0		
59	TEST0		
60	CVBS1	Video signal Input	IN
61	CVBS2	Video Signal Input	IN
62	GND-A		
63	DAT3	Data bus 3	IN
64	DAT4	Data bus 4	IN
65	DAT5	Data bus 5	IN
66	DAT6	Data bus 6	IN
67	DAT7	Data bus 7	IN
68	DAT2	Data bus 2	IN
69	DAT1	Data bus 1	IN
70	DAT0	Data bus 0	IN
71	ADDR0	Address bus 0	OUT
72	ADDR1	Address bus 1	OUT
73	ADDR2	Address bus 2	OUT
74	ADDR3	Address bus 3	OUT
75	ADDR4	Address bus 4	OUT
76	ADDR5	Address bus 5	OUT
77	ADDR6	Address bus 6	OUT
78	ADDR7	Address bus 7	OUT
79	ADDR12	Address bus 12	OUT
80	ADDR15	Address bus 15	OUT

BLOCK DIAGRAM (OUTLINE)



BLOCK DIAGRAM (AV SELECTOR/ NICAM DECODER)

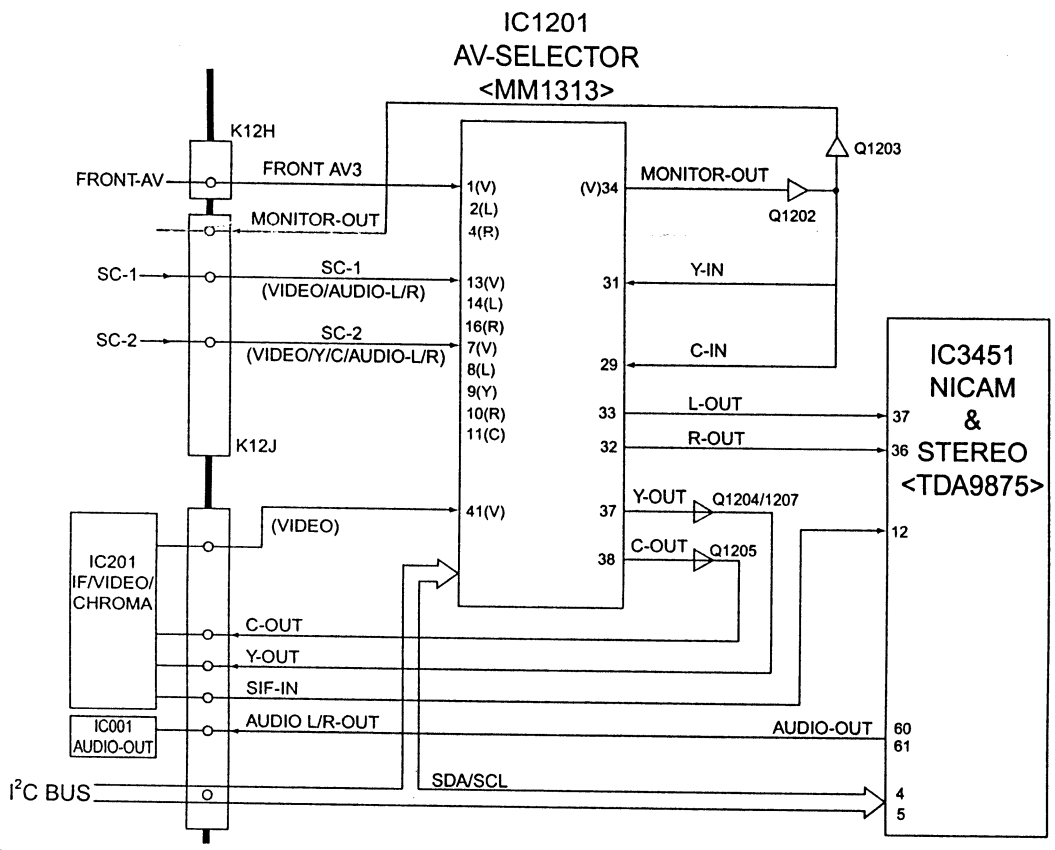


FIG. 2

BLOCK DIAGRAM (SYSTEM CONTROL)

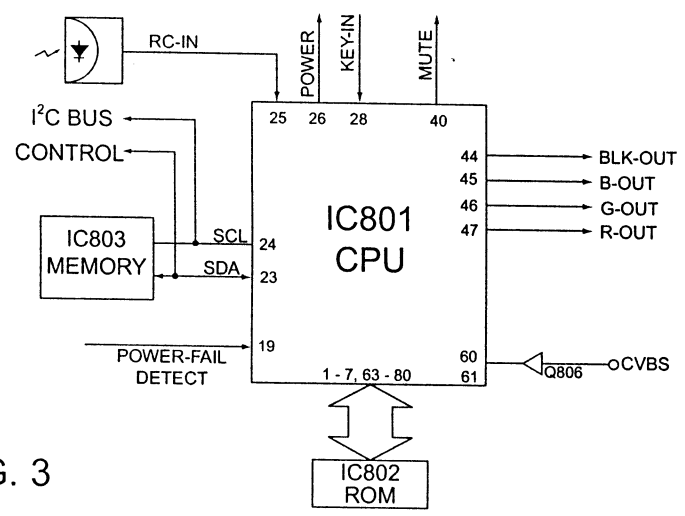


FIG. 3

1AA0B10H042Q0 ASSY,PWB,MAIN C2YLV
1AA4B10E25100 PWB,MAIN C2HC

A101

F1BEB0171

TUNER(WITH PLL & BAND SW)

1AA0B10E59400
ASSY,PWB,CRT C2YC

ASSY,PWB
NICAM&SW

KP J10EA050N

K7P J10EA050N

KM J11RF200N

KJ J11RF150N

K7Q J10EA030N

KQ J10EA030N

KSC J30B 0250N

K1001 J1FK1745 J1TB0490N

K1002 J1FK1745 J1TB0490N

KG J10EA080N

TO_FRONT K19G

IC001 TDA7263M

IC501 LA7846N

IC201 TB1251CN

IC701 TDA6103Q/N3

P-TTARI

TO_FRONT K19N

TO_FRONT K19U

TO_FRONT 19A

KA J10EF070N

KN J10EA080N

KU J10EF050N

KCP X

KCPA J10AN050N

IC801 QXXAVB332M

<ST92R195>

IC802 QXXAAJQ0215A <M27C1001>

TO_FRONT K19F

TO_FRONT K19G

KG J10EA080N

TO_FRONT K19N

TO_FRONT K19U

TO_FRONT 19A

KA J10EF070N

KN J10EA080N

KU J10EF050N

KCP X

KCPA J10AN050N

IC801 QXXAVB332M <ST92R195>

IC802 QXXAAJQ0215A <M27C1001>

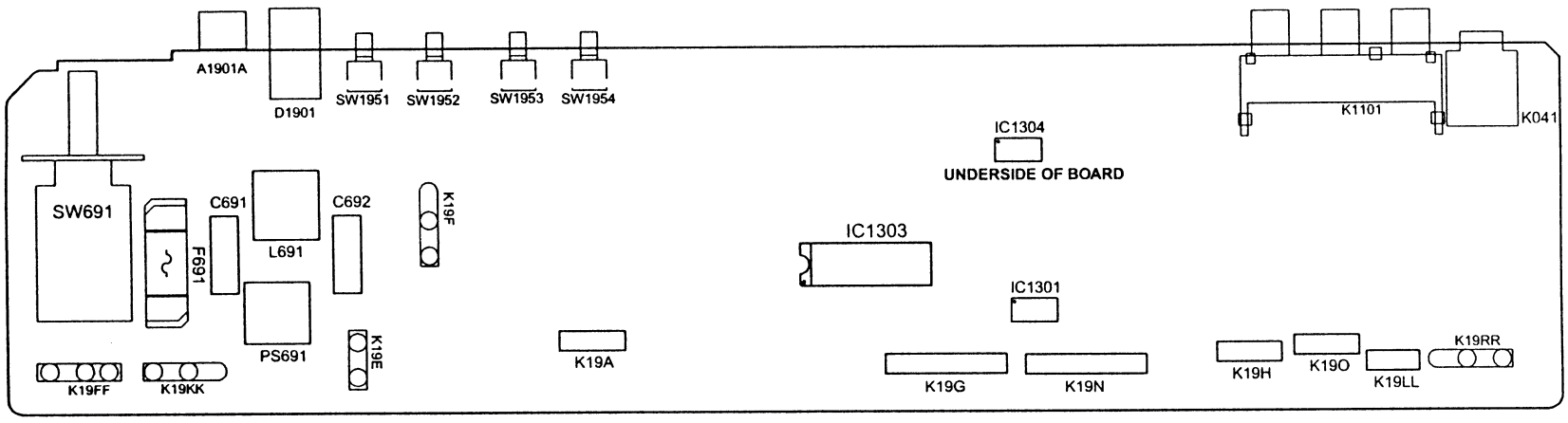
IC803 X24C04P 24LC04B/P

TO_FRONT K19F

TO_FRONT K19G

KG J10EA080N

FRONT BOARD



A101

IC (IC803)]

...bon data of TV set and service adjustments data for each circuit, therefore, ...hould be performed following setting and SERVICE ADJUSTMENT on next

...the remote control and P ▼ button on the front panel of the TV. The option win... ...er the settings as shown below.

...y using the P▲ or P▼ button
...Volume - (LEFT) or Volume + (RIGHT) button.
... mode is stored into the memory IC automatically.

...ble option items and default setting mode

	Description & Note
...OFF	On-timer available, default ON
...TUNE/SORT	Tuning mode, default AUTO TUNING"
...O TUNING	
... EURO PLUS	
...OFF	Plug & Play mode, default ON
...OFF	Display message when first set up, default OFF
... ON	For factory use, default OFF
...OFF	Wide Screen Signaling available, default ON
...OFF	Wide mode, default ON
...GUAGE	Destination option , default 4 LANGUAGE
... LANGUAG	
... ONLY	
...OFF	Teletext mode, default OFF
...OFF	Front AV disable, default ON
...OFF	Television system, default BG / L/L'
...OFF	Auto volume, default ON"

...TS

...ice adjustments for this chassis are controlled by the CPU, IC801, and the ...y using the RC handset.

...mory IC (IC803)]

... the service adjustments data for each circuit, therefore, when the memory IC is ...ed "OPTION SETTING" on previous page and the following adjustments, refer to

...E ADJUSTMENT

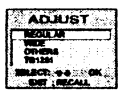
Description
AGC Adjustment
Cut-Off Drive Adjustment
G-Drive Adjustment
B-Drive Adjustment
H-Blanking Phase Adjustment
OSD Positioning Adjustment

Description
Vertical Centre Adjustment
Horizontal Centre Adjustment
Vertical Size Adjustment
Horizontal Size Adjustment
Pcc Adjustment
Trapezoid Distortion Adjustment
Corner Adjustment

...t service adjustments not listed on the above otherwise it may cause ...d product safety.

...Mode

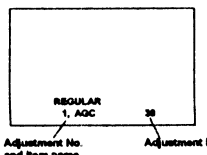
... button on the remote control and then press the P▼ button inside of the door. The ...ear on the screen.



To select the mode and service item and change data value

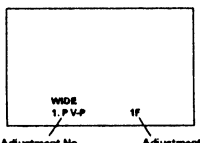
+ Highlight the desired adjustment mode by using the P▲ or P▼ button and then press the F/OK button.
+ To select the adjustment item, use the P▲ or P▼ button.
+ To change the service data, use the Volume -(LEFT) or Volume + (RIGHT) button.
+ The data which is set in the service mode is stored into the memory IC automatically.

REGULAR mode



Adjustment No. and item name — Adjustment Data

WIDE mode



Adjustment No. and item name — Adjustment Data

Exit from the Service Mode

+ Press the RECALL button or turn off the TV set by using the Mains switch.

INITIALISATION OF MEMORY IC

To initialise the memory IC (IC803), press and hold the **NORMAL** button on te remote control and then press the P▲ button on the front panel of the TV set, and then turn the Mains switch Off and On. Now the initialisation is completed.
When initialised the memory IC, all of the setting data (option data and service adjustment data) stored in the IC are reset to the default value. So it is necessary to set the option settings and readjust the service adjustments listed on left page.

ADJUSTMENTS

IMPORTANT NOTICE
Do not attempt to adjust the following service adjustments except when adjustments are required in servicing otherwise it may cause loss of performance and product safety.

+ B VOLTAGE ADJUSTMENT

1. Receive white raster pattern.
2. Set controls to normal.
3. Connect digital voltmetre to test point TP-B and GND.
4. Adjust voltage to 130 ±0.5V using VR841 (21" model).
   Adjust voltage to 150 ±0.5V using VR841 (25" model).
   Adjust voltage to 150 ±0.5V using VR841 (28" model).

AGC ADJUSTMENT

1. Input and tune a VHF RF signal which has the strongest signal strength.
2. Connect digital voltmetre to test point TP-A and GND.
4. Enter to the service mode and select mode "REGULAR", and select item no.1 "REGULAR 1, AGC".
5. Press the **LEVEL+** or **LEVEL -** button to adjust voltage to be 3.2Vdc.

FOCUS ADJUSTMENT

By using FOCUS VR, adjust focus control for well defined scanning lines.

GREY SCALE ADJUSTMENT

SCREEN ADJUSTMENT
1. Receive black & white pattern.
2. Enter to the service mode and select mode "REGULAR", and select item no. 2 "REGULAR 2, CUT". The horizontal line will appear on the screen.
3. Set the SCREEN VR for one colour to be just visible.
4. Using the numeric buttons shown set each colour to minimum by decreasing to the point where any further decrease resets the adjustment to maximum value.

BIAS ADJUSTMENT
5. By using the buttons 1, 2, 4, 5, 7, 8 on the remote control, adjust the line to be white.

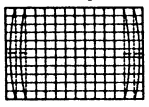
The key allocation is as follows;

Button No.	Operation
1	Increase Red
2	Decrease Red
4	Increase Green
5	Decrease Green
7	Increase Blue
8	Decrease Blue

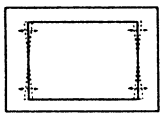
DRIVE ADJUSTMENT
6. Select item no.3 "REGULAR 3, GRY" (G-Drive) or 4 "REGULAR 4, GRY" (B-Drive) and adjust both initially to 3F.
7. Change data value of each item by using **LEVEL +** or **LEVEL -** button to obtain the proper white balance.

PCC ADJUSTMENT

PCC ADJUSTMENT
1. Receive cross hatch pattern and set screen mode to "FULL".
2. Enter to the service mode and select mode "WIDE", and select item no. 7 "WIDE 7.P PCC".
3. Press the **LEVEL+** or **LEVEL -** button to adjust the vertical line to be straight.



TRAPEZOID ADJUSTMENT
1. Receive cross hatch pattern and set screen mode to "FULL".
2. Enter to the service mode and select mode "WIDE", and select item no. 8 "WIDE 8.P TRP".
3. Press the **LEVEL+** or **LEVEL -** button to correct the trapezum distortion of the vertical line.



CORNER ADJUSTMENT
1. Tune the receiver to a cross hatch pattern.
2. Enter to the service mode and select mode "WIDE", and select item no. 10 "WIDE 10.P CNR".
3. Press the **LEVEL+** or **LEVEL -** button to correct the distortion of the vertical line around the corners.

HORIZONTAL ADJUSTMENT

HORIZONTAL CENTRING ADJUSTMENT
1. Tune the receiver to a circular pattern.
2. Enter to the service mode and select mode "WIDE", and select item no. 2 "WIDE 2.P H-P".
3. Press the **LEVEL+** or **LEVEL -** button to adjust the horizontal centre.

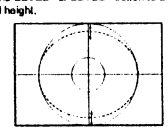
HORIZONTAL WIDTH ADJUSTMENT
1. Tune the receiver to a circular pattern.
2. Enter to the service mode and select mode "WIDE", and select item 6 "WIDE 6.P H-W".
3. Press the **LEVEL+** or **LEVEL -** button to adjust the horizontal width.

HIGH-VOLTAGE CONFIRMATION
1. Tune the receiver to a circular pattern.
2. Set controls to normal.
3. Connect high-voltage meter to the anode of CRT and GND.
4. Confirm that voltage is 38.0±1.0kV for 21" model.
   Confirm that voltage is 29.0±1.0kV for 25" model.
   Confirm that voltage is 29.0±1.0kV for 28" model.

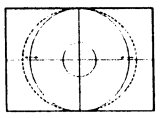
VERTICAL ADJUSTMENT

VERTICAL CENTRING ADJUSTMENT
1. Tune the receiver to a circular pattern.
2. Enter to the service mode and select mode "WIDE", and select item no. 1 "WIDE 1.P V-P".
3. Press the **LEVEL+** or **LEVEL -** button to adjust the vertical centre.

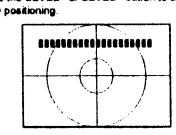
VERTICAL HEIGHT ADJUSTMENT
1. Tune the receiver to a circular pattern.
2. Enter to the service mode and select mode "WIDE", and select item no. 5 "WIDE 5.P V-S.
3. Press the **LEVEL+** or **LEVEL -** button to adjust the vertical height.



H-BLANK ADJUSTMENT
1. Tune the receiver to a circular pattern.
2. Enter to the service mode and select mode "REGULAR", and select item no. 7 "REGULAR 7.H&F".
3. Press the **LEVEL+** or **LEVEL -** button to adjust the centre of picture image to be screen centre.



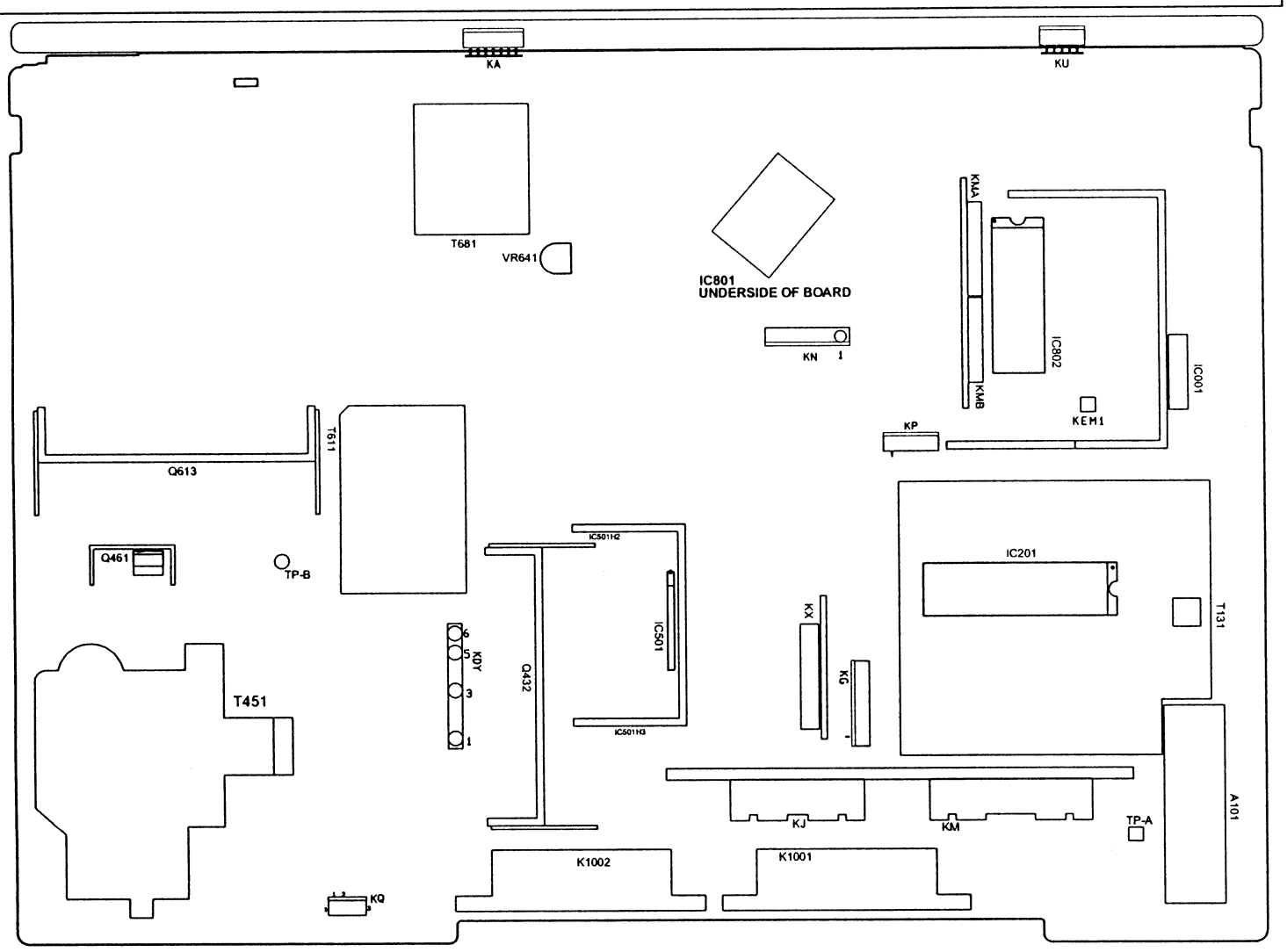
OSD POSITIONING ADJUSTMENT
1. Tune the receiver to a circular pattern.
2. Enter to the service mode and select mode "REGULAR", and select item no. 8 "REGULAR 8 OSD". The OSD test bar will appear on the top of screen.
3. Press the **LEVEL+** or **LEVEL -** button to adjust proper OSD positioning.



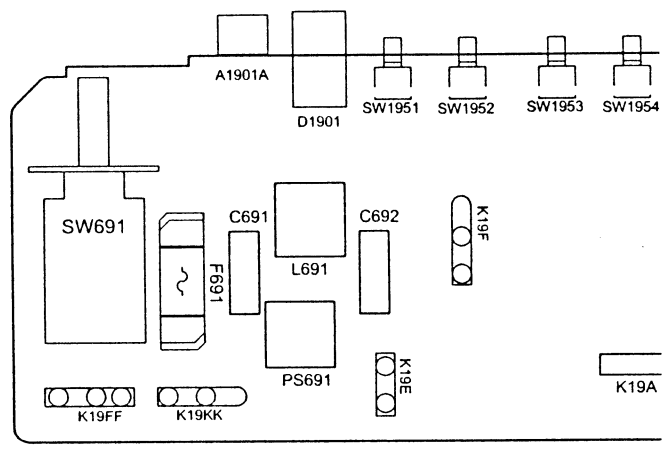
CPU PORT FUNCTIONS

Pin No.	Function Name	Function	IN/OUT
1	MMU0	External memory 0	OUT
2	MMU3	External memory 3	OUT
3	ADDR10	Address bus 10	OUT
4	DSN	Data Strobe	
5	ADDR11	Address bus 11	OUT
6	ADDR9	Address bus 9	OUT
7	ADDR8	Address bus 8	OUT
8	R_WN	Read Write Strobe	
9	GND		
10	VDD	Power Supply	IN
11	OSC-IN	Clock Input	IN
12	OSC-OUT	Clock Output	OUT
13	ADDR13	Address bus 13	OUT
14	ADDR14	Address bus 14	OUT
15	MMU1	External memory 1	OUT
16	MMU2	External memory 2	OUT
17	MMU4	External memory 4	OUT
18	MMU5	External memory 5	OUT
19	P3.7/CSO	Protect - Power failure detect input	IN
20	P3.6/ASN	Dolby CLK(L/L')	OUT
21	P3.5	Dolby SO(Super 3D)	OUT
22	P3.4	PITTARI switch	OUT
23	P5.1	IIC BUS SDA	IN/OUT
24	P5.0	IIC BUS SCL	OUT
25	P2.0	Remote Control Signal Input	IN
26	P2.3	Power Relay & LED Drive On: L	OUT
27	P2.4	SUB CPU SO	OUT
28	P0.2	Key switch input	IN
29	P0.1	SUB CPU CLK	OUT
30	P0.0	SUB CPU SI	IN
31	P4.7	THRESHOLD switch	OUT
32	P4.6	JIMAKU(Capsion) switch	OUT
33	P4.5	On-Timer LED Drive ON: L	OUT
34	VDD		IN
35	GND		
36	P2.1	AV1 Scart function input	IN
37	P2.2	AV2 Scart function input	IN
38	P2.5	RF AGC input	IN
39	P4.4	H-Blank On/Off	OUT
40	P4.3	AMP Mute Mute On: H	OUT
41	P4.2	Dolby RQ	OUT
42	P4.1	H-Blank Phase	OUT
43	P4.0	50/60Hz output 50Hz: H	OUT
44	FB	BLK Output for OSD (Active H)	OUT
45	B	Blue Output for OSD (Active H)	OUT
46	G	Green Output for OSD (Active H)	OUT
47	R	Red Output for OSD (Active H)	OUT
48	V-SYNC	V-Sync Input (Active H)	IN
49	H-SYNC	H-Sync Input (Active H)	IN
50	WSCR	VPS/WSS Slicer Line PLL	
51	WSCF	VPS/WSS Slicer Line PLL	
52	VDD-A	Analogue Power Supply	IN
53	PXFM	Pixel Frequency Multiplier	
54	RESET	Reset Input (Active L)	IN
55	MCFM	Pixel Frequency Multiplier	
56	JTRSTO		
57	TXOF		
58	CVBS0		
59	TEST0		
60	CVBS1	Video signal Input	IN
61	CVBS2	Video Signal Input	IN
62	GND-A		
63	DAT3	Data bus 3	IN
64	DAT4	Data bus 4	IN
65	DAT5	Data bus 5	IN
66	DAT6	Data bus 6	IN
67	DAT7	Data bus 7	IN
68	DAT2	Data bus 2	IN
69	DAT1	Data bus 1	IN
70	DAT0	Data bus 0	IN
71	ADDR0	Address bus 0	OUT
72	ADDR1	Address bus 1	OUT
73	ADDR2	Address bus 2	OUT
74	ADDR3	Address bus 3	OUT
75	ADDR4	Address bus 4	OUT
76	ADDR5	Address bus 5	OUT
77	ADDR6	Address bus 6	OUT
78	ADDR7	Address bus 7	OUT
79	ADDR12	Address bus 12	OUT
80	ADDR15	Address bus 15	OUT

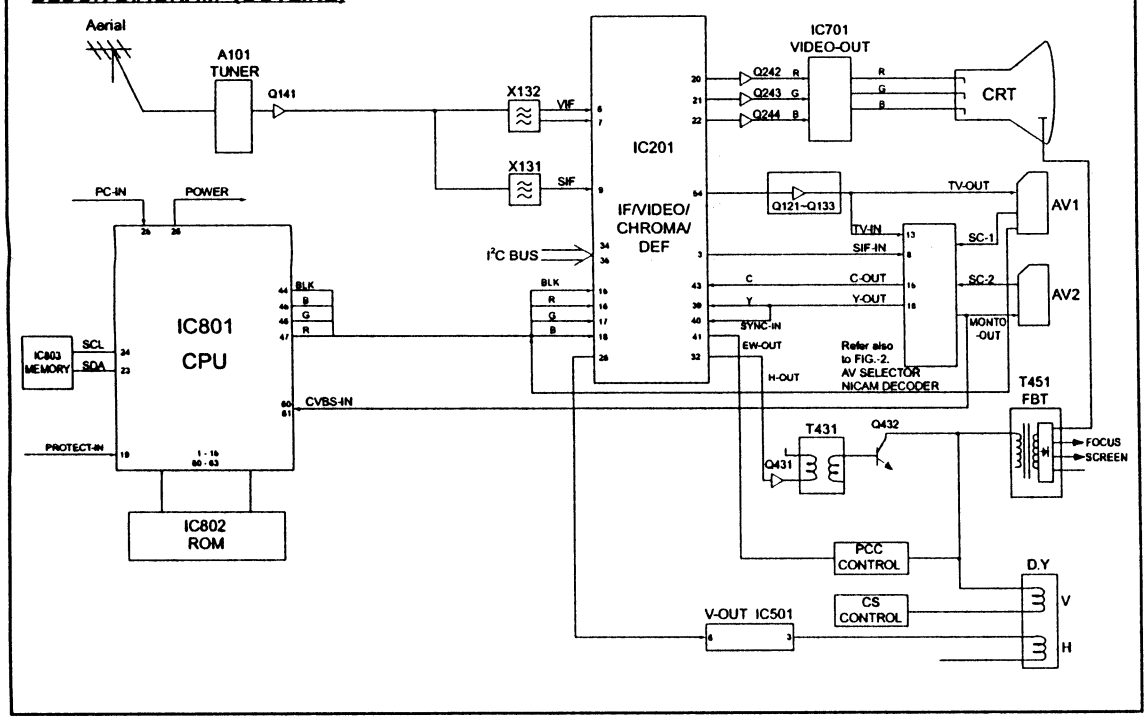
MAIN BOARD



FRONT BOARD



BLOCK DIAGRAM (OUTLINE)



BLOCK DIAGRAM (AV SELECTOR/ NICAM DECODER)

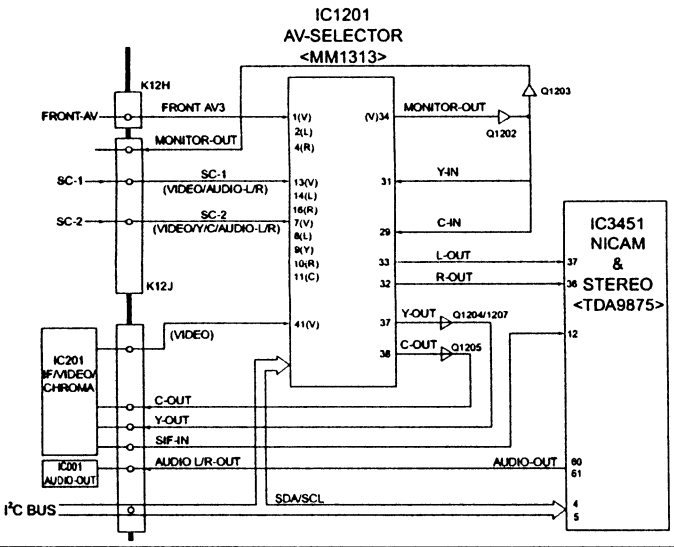


FIG. 2

BLOCK DIAGRAM (SYSTEM CONTROL)

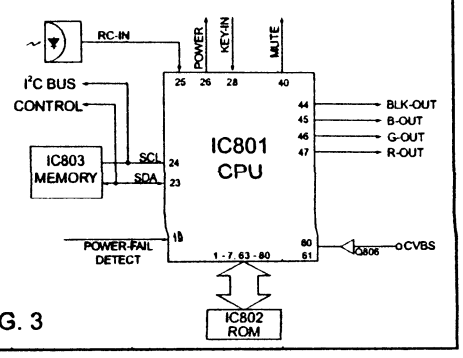


FIG. 3

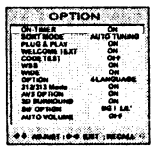
OPTION SETTING

[After replacing the Memory IC (IC803)]

The memory IC, IC803, stores the option data of TV set and service adjustments data for each circuit, therefore, when the memory IC is replaced, it should be performed following setting and SERVICE ADJUSTMENT on next page.

To enter to the Option Mode

+ Press and hold the F/OK button on the remote control and P ▼ button on the front panel of the TV. The option window will appear on the screen. Enter the settings as shown below.



To set the option mode

+ Highlight the desired option item by using the P▲ or P▼ button.
+ To switch the option mode, use the Volume - (LEFT) or Volume + (RIGHT) button.
+ The data which is set in the option mode is stored into the memory IC automatically.

Following table shows the available option items and default setting mode.

Option Mode	Mode	Description & Note
ON-TIMER	ON or OFF	On-timer available, default ON
SORT MODE	AUTO TUNE/SORT or AUTO TUNING or ATS EURO PLUS	Tuning mode, default AUTO TUNING"
PLUG & PLAY	ON or OFF	Plug & Play mode, default ON
WELCOME TEXT	ON or OFF	Display message when first set up, default OFF
CODE TEST	OFF or ON	For factory use, default OFF
WSS	ON or OFF	Wide Screen Signaling available, default ON
WIDE	ON or OFF	Wide mode, default ON
OPTION	4 LANGUAGE or ALL LANGUAG or GB ONLY	Destination option , default 4 LANGUAGE
312/313 Mode	ON or OFF	Teletext mode, default OFF
AV3 OPTION	ON or OFF	Front AV disable, default ON
SIF OPTION	ON or OFF	Television system, default BG / L/L'
AUTO VOLUME	ON or OFF	Auto volume, default ON'

Exit from the Service Mode

+ Press the **RECALL** button.

SERVICE ADJUSTMENTS

Note: Some items of the service adjustments for this chassis are controlled by the CPU, IC801, and the adjustments are carried out by using the RC handset.

[After replacing the Memory IC (IC803)]

The memory IC, IC803, stores the service adjustments data for each circuit, therefore, when the memory IC is replaced, it should be performed "OPTION SETTING" on previous page and the following adjustments, refer to further adjustment on page 14.

ADJUSTABLE SERVICE ADJUSTMENT

REGULAR

Item No.	OSD	Description
1	AGC	AGC Adjustment
2	CUT	Cut-Off Drive Adjustment
3	GRY	G-Drive Adjustment
4	GRY	B-Drive Adjustment
7	HBP	H-Blanking Phase Adjustment
8	OSD	OSD Positioning Adjustment

WIDE

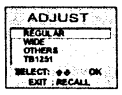
Item No.	OSD	Description
1	P V-P	Vertical Centre Adjustment
2	P H-P	Horizontal Centre Adjustment
5	P V-S	Vertical Size Adjustment
6	P H-S	Horizontal Size Adjustment
7	P PCC	Pcc Adjustment
8	P TRP	Trapezoid Distortion Adjustment
10	P CNR	Corner Adjustment

IMPORTANT NOTICE

Do not attempt to adjust service adjustments not listed on the above otherwise it may cause loss of performance and product safety.

To enter to the Service Mode

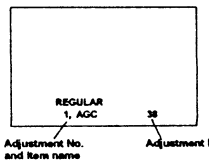
+ Press and hold the **GREEN** button on the remote control and then press the **P▼** button inside of the door. The adjustment window will appear on the screen.



To select the mode and service item and change data

+ Highlight the desired adjustment mode by using the P▲ or P▼ b
+ To select the adjustment item, use the P▲ or P▼ button.
+ To change the service data, use the **Volume -(LEFT)** or **Volume**
+ The data which is set in the service mode is stored into the memo

REGULAR mode



Exit from the Service Mode

+ Press the **RECALL** button or turn off the TV set by using the Main

INITIALISATION OF MEMORY IC

To initialise the memory IC (IC803), press and hold the **NORMAL** bu button on the front panel of the TV set, and then turn the Mains swit completed.
When initialised the memory IC, all of the setting data (option data a reset to the default value. So it is necessary to set the option setting left page.

ADJUSTMENTS

IMPORTANT NOTICE

Do not attempt to adjust the following service adjustments except w otherwise it may cause loss of performance and product safety.

+ B VOLTAGE ADJUSTMENT

1. Receive white raster pattern.
2. Set controls to normal.
3. Connect digital voltmetre to test point TP-B and GND.
4. Adjust voltage to 130 ±0.5V using VR641 (21" model).
   Adjust voltage to 150 ±0.5V using VR641 (25" model).
   Adjust voltage to 150 ±0.5V using VR641 (28" model).

AGC ADJUSTMENT

1. Input and tune a VHF RF signal which has the strongest signal strength.
2. Connect digital voltmetre to test point TP-A and GND.
4. Enter to the service mode and select mode "REGULAR", and select item no.1 "REGULAR 1, AGC".
5. Press the **LEVEL +** or **LEVEL -** button to adjust voltage to be 3.2Vdc.

FOCUS ADJUSTMENT

By using FOCUS VR, adjust focus control for well defined scanning lines.

GREY SCALE ADJUSTMENT

SCREEN ADJUSTMENT

1. Receive black & white pattern.
2. Enter to the service mode and select mode "REGULAR", and select item no. 2 "REGULAR 2, CUT". The horizontal line will appear on the screen.
3. Set the SCREEN VR for one colour to be just visible.
4. Using the numeric buttons shown set each colour to minimum by decreasing to the point where any further decrease resets the adjustment to maximum value.

BIAS ADJUSTMENT

5. By using the buttons 1, 2, 4, 5, 7, 8 on the remote control, adjust the line to be white.

The key allocation is as follows;

Button
1
2
4
5
7
8

DRIVE A

6. Select "REGI to 3F
7. Chang LEVE

PCC A

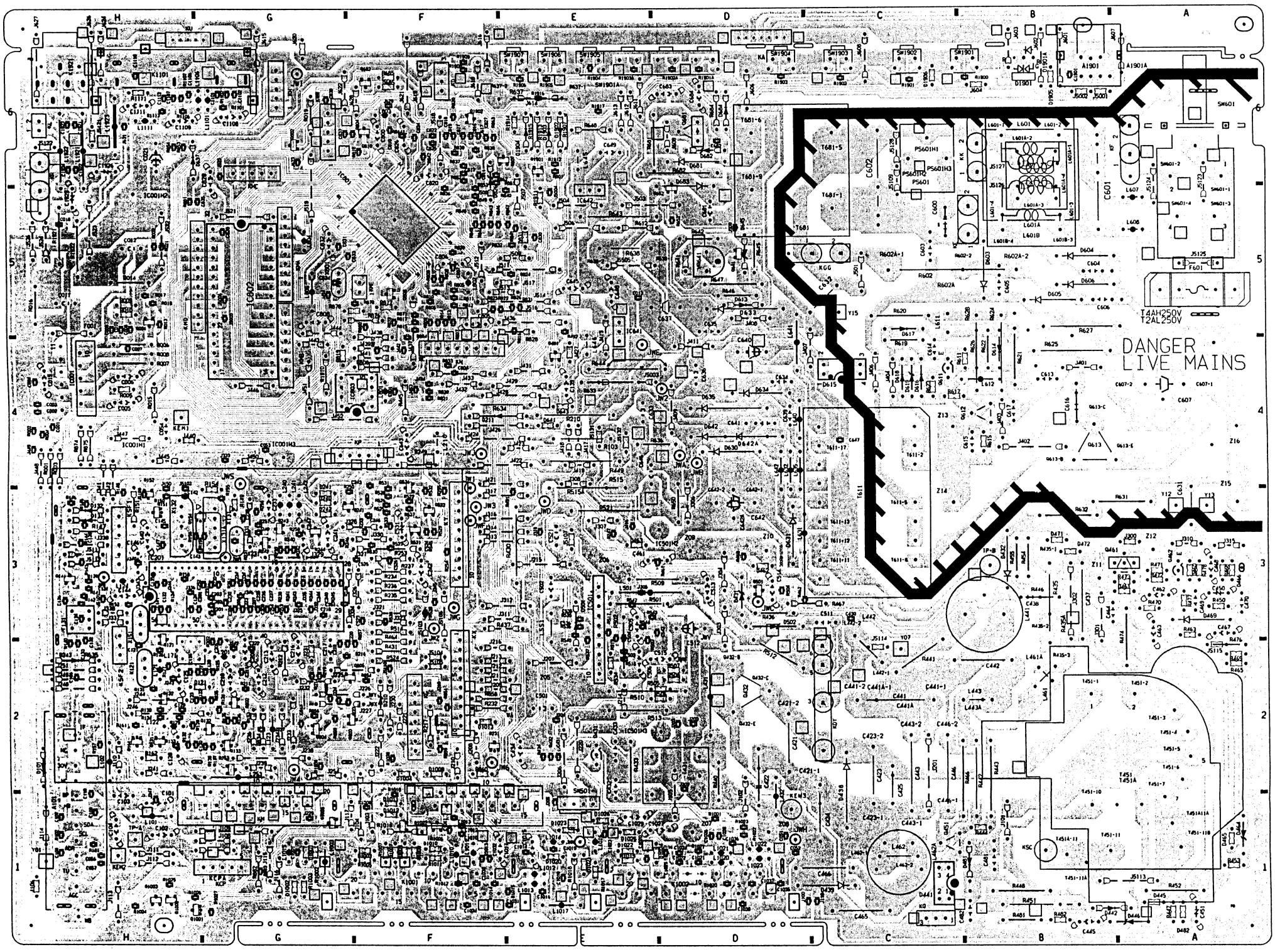
PCC AD

1. Recei "FULL
2. Enter and s
3. Press vertic

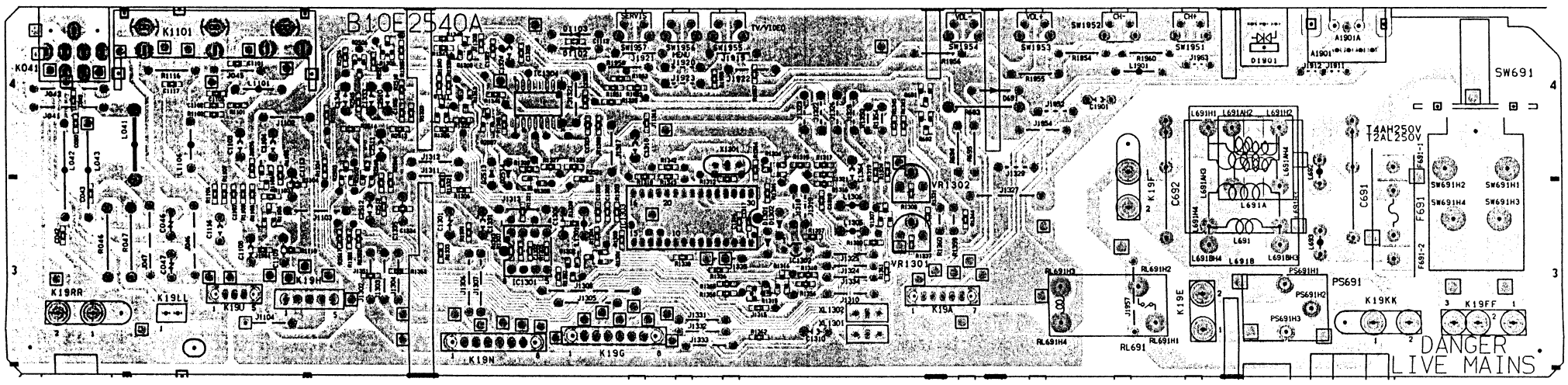
TRAPEZ

1. Recei "FULL
2. Enter and s
3. Press trapez

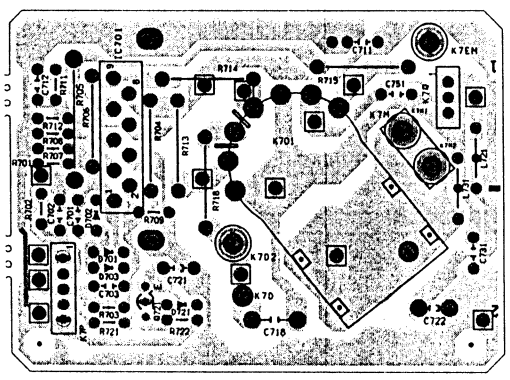
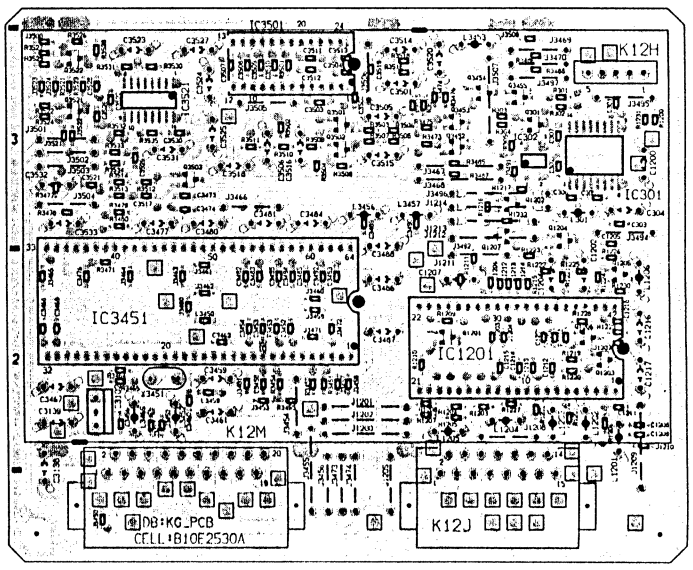
MAIN BOARD



FRONT BOARD



CRT BOARD



A2 STEREO BOARD